

EDUCATION, SCIENTIFIC POLICY
AND DEVELOPING SOCIETIES

EDUCATION, SCIENTIFIC POLICY AND DEVELOPING SOCIETIES

Edited by

A. B. SHAH

Foreword by

EDWARD SHILS



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FOREWORD

I

ONE OF THE intentions which prompted the foundation of *Minerva* was that it should serve the higher educational and scientific needs of countries like India, by making available to them the experience of other developing countries and of the more advanced countries in questions of higher educational and scientific policy. It is for this reason that I am especially pleased to respond to the invitation to write a foreword to this volume of articles selected from the pages of *Minerva* and now published in Bombay. The volume appears very shortly after the Report of the Education Commission of the Government of India, which includes an elaborate discussion of higher education in India and detailed proposals for its reform. The Report of the Education Commission is a major event in Indian history but its scope, courage, and imagination do not guarantee its success. Whatever success the Report will have will depend on its persuasive power within the Government of India and in the State Governments, in Central and State legislative bodies, in the universities and colleges of India, and before the bar of Indian public opinion. It can acquire this power only through the fullest and most enlightened public discussion and clarification of the problems of numbers, quality of instruction, student morale, etc., which are the problems of higher education in India—and elsewhere. This volume, consisting of essays composed by studious and independent minds, should bring to the discussion the detached and informed perspective which must be joined to the sense of urgency without which the reforms envisaged by the Commission will not see the light of day. A more appropriate time could not, therefore, have been found for the publication of this volume.

I I

Readers of the essays which follow will immediately be struck by the fact that India's problems are not unique. Practically all the countries of Asia, like the advanced countries of the West, have experienced, in consequence of a new self-esteem which has spread into the lower middle and poorer classes of the societies, an intensification of the desire for education, not least for higher education. The increased affluence of these societies, the strength of public opinion, and the deliberate policy of governments—and this applies both to the underdeveloped societies and to the advanced societies—have resulted in the establishment of numerous institutions for the provision of this education. Not many of these universities and colleges created in the past quarter century operate at a high academic standard. In the Asian countries in which higher educational institutions, before the beginning of the Second World War, did not always function at a high level, the multiplication of student numbers and the increased number of universities and colleges have coincided, as a result of economic and administrative expansion, with an increase in opportunities for employment in government services and to some extent in business enterprises. This expansion might not be commensurate with the needs for employment of the numerous graduates who are produced by the universities, but it competes very effectively with the universities for the services of talented young persons who might otherwise enter academic careers. This imposes a severe strain on the capacity of the higher educational systems in Asia to satisfy the need for numerous and able university teachers. The large numbers to be taught, the difficulties of recruiting outstanding persons for the profession of university teaching as a result, the relative disadvantages of the teaching profession in conditions of service, opportunities for initiative and responsibility, and remuneration, together with the poor pedagogical and scholarly traditions inherited from the colonial period, have all furthered the deterioration of standards. The major task of the universities in those underdeveloped countries which have acknowledged the rightfulness of widespread access to higher education is the elevation of standards. Reforms which do not have as their main aim, directly or indirectly, the improvement of the quality of intellectual

performance of students and teachers, i.e., the elevation of standards, will in the end result in their own frustration.

I I I

It is difficult enough to maintain standards in countries where they have already achieved a high level and where they are now threatened by factors similar to those which are afflicting underdeveloped countries, namely, the great expansion in student numbers and the competition of attractive careers for potential teachers in government, industry, commerce, and research. It is especially difficult to attempt to elevate standards in countries where they have previously not been established, where they do not have a firmly rooted tradition.

The articles in this collection, such as those of Dr Stevan Dedijer, Dr D. D. Karve, Professor M. S. Lipset, Professor Ralph Pieris, Professor T. H. Silcock, and the memorandum of the Institute of Political and Social Studies on Indian Scientific Policy, show what the situation is. Throughout the mass universities of the new states—and the old ones too—of South and Southeast Asia and of other parts of the world, the same processes operate, with results for all to see. Graduates are poorly educated; teachers are excessively burdened, intellectually dulled and sterilised, diverted into political intrigue and agitation; students are reluctant and resistant, frequently in rebellion. A tiny minority of students manages to survive and to triumph over adverse conditions, but in many cases these students, once they have completed their training, are reluctant to enter academic careers in their own countries. They are aware of the disadvantages of an academic career. Many seek to escape into government service. Those who are able to go abroad for further study do so, and then draw out the period of absence from their own countries. Some even stay abroad permanently. Both those who cannot go abroad and those who have gone abroad and returned frequently witness, if they enter the academic profession, a steady debilitation of their intellectual capacities, their interests, their enthusiasm, and their curiosity. And of course, the less interested the teachers, the less interested and the more restless the students, and the more fruitless their university years.

Yet no damming of the flood of numbers of students is to be envisaged. Parents wish to have their children educated, although they do not have any very clear idea of what the education entails. The economies of the South and Southeast Asian countries have in any case very few opportunities for remunerative employment for secondary school leavers. The populist political outlook which prevails in most Asian countries does not permit a policy of severe restrictions in access to higher education. If no way out in the present circumstances is available through a policy of restriction of admissions, is there any prospect of an elevation of standards in the recruitment of teachers, in the quality of teaching, in student examination performance, in achievements in research, and in all the other activities which are constitutive of a first-class university?

In my view, the elevation of standards is bound to remain a very dim prospect as long as resources are spread more or less equally over the whole system. The solution, therefore, seems to lie in some concentration of resources.

An absolute concentration would be contrary to the principles to which all responsible persons in the Asian societies are committed. It would be politically impossible, furthermore, since neither adult public opinion nor that of the young persons whose chances would thus be cut off would take such a decision lightly. Perhaps a rigorously repressive dictatorial regime could shut down many or most of the institutions of higher education in a given country, but it could do so only for a limited period. (It too would have to respond to the pressure for education, as well as to its own needs for educated personnel). Such drastic procedures are inconceivable in a democratic country like India.

Neither a continuation of the present system of attempting to develop more or less equally a very large number of institutions of higher education, nor a policy of drastic restriction which might involve the limitation of student numbers to an extent appropriate to the capacity of the university system to give them an education of outstanding quality, and the closure of certain, perhaps even most, institutions, is acceptable. The former policy would only perpetuate and aggravate the present unsatisfactory situation; the latter would be politically impracticable, morally repugnant, and quite unnecessary. The only reasonable alter-

native, it seems obvious, is some form of partial concentration of resources on a limited number of institutions. Since the total expenditure on higher education will continue to increase, the increase should be concentrated on the institutions selected for development into the highest class, while something like the present level of support should be maintained for the rest of the system. It must be a partial concentration of more than financial resources. A concentration of financial resources alone, even if they were ample, would never be able to do the job of reconstructing the university systems of the South Asian countries. Such a policy of concentration will be sterile if it is not accompanied by a partial concentration of talents—of talented teachers, research workers, and students. A good university—to say nothing of a great university—cannot exist unless it is an intellectual community, containing numerous intellectual sub-communities, such as are inevitable in an age of academic specialisation, in the various fields of science and scholarship. Intellectual communities cannot exist unless there are sufficient persons—older and younger—of high intellectual qualities, intensity of interest and aspiration, who are passionately devoted to their tasks, who interact with each other, who are aware of each other's presence, and who are influenced and motivated by the awareness of the high expectations which they and their colleagues have toward each other.

At present India, more than other Asian countries, is suffering from the "brain drain" which diminishes the stock of talented manpower available in India. But the "brain drain" is not only an external phenomenon. It is also an internal phenomenon. "Brains" drain downward into an intellectually arid soil; they deteriorate from isolation and the consequent lack of that stimulus which comes from curious and active colleagues and students. There is a second type of internal "brain drain". The perception of so much sterility in the academic world causes able young persons to follow other careers. "Brains" are drained from academic careers within India, and this makes the reconstruction of the Indian universities more difficult. The various external and internal "brain drains" in India are the results of a higher educational policy which spreads too thinly, over too many institutions, financial and human resources which are inadequate to form the

intellectual communities throughout the system. As a result, intellectual communities are formed scarcely anywhere. The stimulation and intensification of intellectual exertion are hardly given a chance to come into existence.

I V

This fact must be faced: in a populist democratic age, a country must have at least one or several elite universities to set high standards for the others and to maintain them for themselves, to supply teachers and research workers of high quality to the other universities, to supply outstandingly well-trained persons for journalism, public service, industry, etc. The condition of inequality of provision and performance in the university system which a policy of partial concentration entails need not be a permanent condition. It is, furthermore, a condition which will be transcended only if strenuous efforts are devoted to the creation of these elite universities. As the elite universities are created—preferably out of existing universities—the process of the transformation of the entire system will progress and gain in strength. It will not be an easy task, particularly in a democratic country where the whole tendency of opinion, as it is in so many other countries of the world, is in favour of the equality of status of individuals and institutions. Yet if the policy of partial concentration is not adopted and persisted in, the entire system will continue to deteriorate. If it is adopted and persisted in, then India will have a chance to become a better country, intellectually, socially, politically and administratively.

This is why it is so important that public opinion concerning higher education in India be transformed. The situation described so vividly and accurately by Dr Karve in his article in this collection shows how necessary it is that Indian public opinion be brought to affirm the need for an elevation of the standards of teaching, study, and research in Indian universities and colleges. Indian public opinion must come to appreciate that this elevation of standards can be brought about only by this concentration—even if only partial—of material and human resources, and to understand that unless this course is taken, higher education will decline further and the result will be the utter dilapidation of the public and intellectual life of the country.

That is why I hope that the essays in this book will help to stir the discussion which is necessary for the reorientation of public opinion in India on the problems of higher education. The editor of this collection, Professor A. B. Shah, has already played a significant part in arousing discussion and in focusing attention on the problems of university life in India. I take this opportunity to express my admiration for his accomplishments thus far and to commend his initiative in the editing of the present anthology for the Indian public. The realistic understanding of the needs and costs involved in the improvement of higher education in India is a necessary condition of that improvement. I wish this book well in its task of contributing to that realistic understanding.

7 October 1966

EDWARD SHILS

INTRODUCTION

THE REPORT OF the Education Commission (1964-66) appointed by the Government of India carries the sub-title 'Education and National Development'. It emphasizes at some length the crucial role of science and technology in promoting economic growth and seeks to make science teaching and research an integral part of Indian education. Indeed, in the Commission's own words, 'the basic approach and philosophy underlying the reconstruction of education adopted by us in this Report rests on our deep conviction that the progress, welfare and security of the nation depend critically on a rapid, planned and sustained growth in the quality and extent of education and research in science and technology'. The Commission also recognizes as 'even more profound' the contribution to culture that science has made in advanced countries and has yet to make in modernizing ones. As a matter of fact, as the experience of most newly independent nations of Asia and Africa shows, technology is apt to remain largely sterile in a society which has not yet made science a part of its cultural tradition. This is not surprising, for economic growth presupposes certain attitudes and qualities of the mind on the part of those whose efforts are supposed to bring it about. And these attitudes and qualities of the mind—the empirical approach and a sense of secular involvement; the questing spirit and the faith in the creativity of man; patience, integrity and the capacity for hard and sustained work, however humble in character; love of adventure and the inner courage required for the steady, unostentatious pursuit of an ideal—all these, while useful in any other field, are indispensable for the success of the undertaking that science is. To the extent that a people already has these qualities, not only science has a favourable soil for its growth but technology too can easily take root among them. This is not a question of democracy *versus* dictatorship, though it is obvious that the more authoritarian a society, including its political structure, is, the narrower the limits within which the development of science must keep. Even

then the inhibiting effect of authoritarianism will be felt less in the field of physical and engineering sciences than of the sciences of man. The fate of biology and economics under Stalin and the comparatively underdeveloped state of the social sciences in Japan on the eve of its democratization are examples of what political and cultural authoritarianism can mean for these sciences.

In India, and to a large extent even in the new states governed by dictatorships, the growth of science is cramped more by the inherited social structure and cultural tradition than by a consciously operating political authoritarianism emanating from the state. These have been influenced to a varying, but in all cases only to a limited, extent by contact with the West. It is true, that independence brought to these countries the material appurtenances of a modern state. But the intangible preconditions for the evolution of their societies into intellectually and culturally dynamic ones, with scope for personal initiative and experimentation were hardly there. India may be regarded as one of the few countries in which this impact has proceeded beyond the critical threshold. And yet, as anyone who has observed from the inside the organization and functioning of the institutions of higher education and research in this country knows, red tape and a feudal attitude to authority are much greater obstacles than the paucity of funds in the way of education becoming a 'powerful instrument of social change' as the Education Commission visualizes its role.

What is true of higher education is equally, if not more, true of science and technology in India. Indeed, since most government-supported science research is carried on in the National Laboratories which are run on the same principles of hierarchy as rule the administration, research in science and technology suffers all the more from the handicaps of a backward culture. The memorandum submitted by the Institute of Political and Social Studies (pp. 387-400) would give some idea of the malaise that afflicts scientific research in India even when it is undertaken with a view to application for economic growth.

Because of the limitations of time and space, the Education Commission naturally could not go into sufficient detail in its examination of the factors which inhibit and frustrate efforts at revitalizing education and research in science and technology. The present volume, it is hoped, will meet this need to some extent.

The articles have been selected with the problems of developing societies in view. Most of them directly deal with these problems, while a few others seek to provide a comparative view or a more comprehensive background for thinking on them to be meaningful in the rapidly changing context of the contemporary world.

I am grateful to Professor Edward Shils, Editor of *Minerva* and a true friend of Indian educationists and intellectuals for permission to reprint the articles included here and also for the very perceptive *Foreword* to this volume in spite of his being under severe pressure of work. I am also grateful to the various authors for their ready consent to the inclusion of their articles and to Dr D. S. Kothari, Chairman of the Education Commission for permission to publish in this volume the memorandum submitted to the Commission by Professor Shils.

1 January 1967

A. B. SHAH

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**EDUCATION, SCIENTIFIC POLICY
AND DEVELOPING SOCIETIES**

PART 1
GENERAL

UNIVERSITIES UNDER SIEGE

ERIC ASHBY

NOTE: This is the text of the first Chancellor's Lecture, delivered in the Great Hall of the University of the Witwatersrand, Johannesburg, South Africa, on 4 April 1962. The Chancellor's Lecture was established to commemorate in every third year the following Dedication, which was affirmed by the General Assembly of the University on 16 April 1959:

We are gathered here today to affirm in the name of the University of the Witwatersrand that it is our duty to uphold the principle that a University is a place where men and women without regard to race and colour are welcome to join in the acquisition and advancement of knowledge and to continue faithfully to defend this ideal against all who have sought by legislative enactment to curtail the autonomy of the University. Now, therefore, we dedicate ourselves to the maintenance of this ideal and to the restoration of the autonomy of our University.

I

I WANT to say three things by way of preamble. The first is to thank the University for admitting me to the ranks of its graduates: it is a great honour which I shall treasure all the more because of the occasion on which you have bestowed it. The second thing is to say how proud I am to have been asked to give this lecture: it is a responsibility which I shall now do my best to discharge. Thirdly I want to define my position here. I am a guest in your country. It would be discourteous of me to comment on the policies of your Government, and I shall avoid any such discourtesy. But in this University I am not a guest: I am a colleague. Your University and mine, together with hundreds of others, are partners in a great international enterprise; collectively the universities

carry on their shoulders a major responsibility for the transmission of Western civilization. Moreover, since you have in your generosity made me one of your graduates, we can talk together as members of the same society.

Three years ago, in moving words which you have now cut in bronze, this University dedicated itself to an ideal, and to the restoration of its autonomy to achieve this ideal. And about five years ago there was published from the Press of this University an essay on 'The Open Universities of South Africa' which sets out, with clarity and dignity, the function of this University in this Nation. The essay declares, more eloquently than I can, why we are assembled here today; and its words have much more than local significance: they are a manifesto for all universities in a world where many of the values cherished by universities are in danger. I invite you now to reflect on one passage from this essay:

Experience shows that a society, however successful it may have been in the past, will not long survive if it cannot cope with the tasks of a new era. For this reason every civilized society tends to develop institutions which will enable it to acquire, digest, and advance knowledge relevant to the tasks which, it is thought, will confront it in the future. Of these institutions, the university is the most important.

My theme is the uniqueness of universities among social institutions. They have a universality greater even than that of the Church, for they deal with concepts which command the assent of educated men irrespective of race, colour, religion, language, or politics. When two academics talk about science or scholarship the differences between them become irrelevant. One may be a devout Christian: the other an unbeliever. One may be a European from Paris: the other a Yoruba from Lagos. As they discuss biology or history they are united by a network of assumptions which they share in common and of propositions to which they both subscribe. Therefore universities have a dual loyalty: everyone agrees that they must serve the society which maintains them; but those who understand universities know that this service cannot be fulfilled unless society grants them certain privileges, so that they

can be loyal also to the international brotherhood of universities. They are within the state, yet they must preserve an individuality apart from the state. They cannot exist except in the matrix of politics, yet they must remain out of reach of politics. These are fine words, easy to repeat. It is not until they are challenged, as they are today in South Africa, that we come to ask what they really mean.

What justifies a university in claiming privileges which are not granted to other institutions in society? Why should a university have a greater degree of autonomy within the state than (say) the Electricity Supply Commission or the South African Railways and Harbours? Have we the right to assert one law for the lecture room and another for the railway carriage?

There seem to me to be two ways to approach these questions. One is the legalistic approach. It relies on tradition, precedent and statute. For over six centuries universities have claimed the right to decide for themselves 'who may teach, what may be taught, how it shall be taught, and who may be taught' (this is the excellent summary of the four academic freedoms, written by the late J. B. Davie of Cape Town, whose defence of these freedoms we remember with gratitude today). There are centuries of precedent for these claims, and in many countries the claims are confirmed by the constitutions governing the universities. And so—the argument runs—universities must be given freedom to manage their own affairs, simply because they have for six centuries claimed this freedom.

I confess I am not satisfied to rely on this approach alone. Precedents and traditions are not immutable: indeed they are for ever being eroded away by research and reflection on social problems, much of it done in universities. And as for constitutions and contracts, we live in an age which can put very little faith in them. Even in the past they have not proved reliable defences. Oxford and Cambridge succumbed to the Royal Injunction of 1535 and to Parliament's interference with their charters in 1647. The Revolution destroyed the ancient universities of France, and Napoleon's Université Impériale put in their place a rigid hierarchy chained to the Central Government. In the nineteenth century the State dismissed seven professors from Göttingen for refusing to support a fresh and reactionary constitution. Hitler, by means

only too familiar to you in South Africa, excluded Jews from German and Austrian universities. And more recently the fanaticism of Senator McCarthy passed like an ominous eclipse over some of the universities of America. The history of academic freedom is littered with defeats.

But these defeats have not destroyed the concept of a university: they have strengthened it; and they suggest a second, and to my mind more satisfying, way to approach the question of university autonomy. It is not a legalistic but an empirical approach. Do we in fact find that universities which enjoy certain privileges serve society better, or worse, than those which do not? This is a question which can be put to proof. When we put it to proof we realize that the uniqueness of universities is not just an agreeable tradition: it is a necessity. A nation which deprives universities of their privileges soon shows symptoms of a slow intellectual and cultural decay; that is what has happened to Spain. Despite the protests of men like Miguel de Unamuno, Rector of Salamanca, who defied authority with the words 'to keep silence is to lie', the Spanish government has denied to its universities the fresh air of freedom; and the result? Spain is now on the intellectual bread-line. And a university which is content to let its privileges slip away betrays not only itself but its country; that is what happened to Bonn University when in 1937 it publicly deprived Thomas Mann of his degree. Because the German universities acquiesced in the prostitution of history and biology for Nazi ends, a paralysis overcame the conscience of German intellectuals; and this was one cause of Germany's downfall.

To forbid the student to learn where and what he will, or the teacher to teach whom and how he will, is to put a curb on the hazardous adventure of thinking, and a nation where thinking is rationed simply cannot survive in today's world. Of course thinking is dangerous. Little ideas don't upset anybody very much, but great ideas generate resentment and threaten vested interests and demand uncomfortable adaptations in society. They begin by being disruptive, whether they are scientific ideas, such as the theory of evolution, or sociological ideas, such as the belief that the black man has as honourable a place as the white man to play in Western civilization. For this very reason nothing is more dangerous to a country than uncriticized ideas: the dogma which must

not be disputed, the party line which must be followed. Innovation must always be accompanied by dissent, but there is a diplomacy of dissent, and it is in the university that our young people may learn it.

There is no substitute (let me quote again from 'The Open Universities') for the clash of mind between colleague and colleague, between teacher and student, between student and student. . . . It is here that the half-formed idea may take shape, the groundless belief be shattered, the developing theory be tested. . . . It is here that controversy develops, and out of controversy, deeper understanding.

A university is the principal instrument of society for achieving these ends. Its social purpose is not only to train professional men and women: it must also be the forum for dialectic over intellectual affairs, just as the Press must be the forum for dialectic over day-to-day affairs. Without their privileges, both these instruments—the Press and the University—lose their value to society.

I said that the unique privileges which society accords to universities are not an agreeable tradition, but a necessity, and that where they are withdrawn, society suffers. The interesting empirical fact is that these privileges are preserved in all intellectually healthy countries, even though the universities in these countries have long since lost their defences against the State. The universities in Holland, Western Germany, France and the British Commonwealth, and all but a few private universities in America, now depend on the state for finance. If the state withdrew its patronage most of them could not survive six months. Some, as in France and Germany, are virtually government departments with Ministerial control of senior appointments. Some, like the state universities in America, have boards of trustees which are frankly agents of the legislature. Some, as in Britain and Australia, are *de jure* independent corporations, though *de facto* they are obliged to accept such controls and restraints as government care to put on them. In none of these countries do universities any longer have any effective formal defence against invasion of their traditional privileges: yet in all these countries their privileges—to select students and staff, to plan courses and curricula—are respected and honoured.

This entitles us to draw a conclusion: namely that universities retain their privileges not by power but by popular consent. And the popular consent rests not on respect for some quaint and esoteric tradition, but on the plain fact that the privileges have been shown to be necessary. They are necessary because the possessions which matter most in a university are not its buildings, not even its libraries and equipment, but its ideas. Quality of ideas depends on quality of staff, and first-rate staff simply will not work under conditions fixed by those who are afraid of ideas. The justification for the open university does not rest only on tradition or precedent or statute: it rests also on pragmatism. A society which closes a door into its universities closes its eyes to the future.

I have, as I warned you, said nothing new. I make no apology for this. We are celebrating an anniversary, a moment of rededication. The essence of such a day is reaffirmation. I join you in reaffirming what your resolution, set up at the entrance to this Hall, so rightly describes as 'our duty'.

II

And now let us examine more closely what our duty is. Permit me first to remind you of something which the world-wide fraternity of universities, watching the open universities of South Africa, never forgets: it is that this University has not been defeated; it is simply withstanding a siege. Its privileges have not been betrayed from within but challenged from without.

Cities under siege command the admiration of the world, though they are at the time extremely uncomfortable for the inhabitants. They command admiration because the very fact that they will not capitulate means that morale is high and that the people welcome opportunities for heroism and endurance. Similar things can be said about a university under siege; and I assure you that it is no empty compliment to say that the stand this University has taken has evoked admiration and a shared pride in scores of other universities; especially in those which have had to repel little local forays in their own countries against academic freedom.

Let me, therefore, try to tell you what the sixteenth of April at Witwatersrand means to other universities in the world: to

your elder brothers in Cambridge and Harvard, Berlin and Leiden; and to your much younger brothers on this Continent, in Dakar and Ibadan, Khartoum and Salisbury.

It is first of all an assertion of faith in Man. One critic of the open universities¹ has written 'If apartheid in general is right . . . apartheid in the universities must also be right'. And he then goes on to say that 'the liberal idea of a university, which is open to all students of all races and serves the community as a whole, and not any particular racial group within it, is unacceptable'. As a guest in your country, I shall not comment on whether apartheid in general is right. But I do condemn without reserve the shallow assumption that even if apartheid were right for the post office and the railway station it would automatically be right for the classroom. It is difficult to see any relevance at all between the segregation of black and white and the sale of stamps and tickets. But the very purpose of a university, the faith it lives by, requires it to reject any basis of segregation save intellectual merit. Therefore the only justification for university apartheid would be convincing evidence for the assertion that black men are inferior intellectually to white men. In fact there is a convincing evidence against this assertion. In 1960 some 300 African students sat for London University degree examinations from the university colleges in East and West Africa. About 80 per cent passed. This percentage is about the same as that for internal candidates in the colleges of London University. I have been closely associated with the development of higher education in parts of tropical Africa and I have had African research students under my supervision. All the evidence familiar to me points to the conclusion that, given similar health-records and similar educational opportunities, the distribution of intelligence among Africans is just the same as among Europeans. Moreover there is no reason to believe that this is merely a recent achievement among the most advanced African communities; let us not forget that the first negro African to graduate from a European university was Jacobus Elza Johannes, who was sent from West Africa to Leiden University in Holland in 1726. He returned, a graduate, to teach on the Cape Coast a whole century before Piet Retief set out on the Great Trek. We do

¹ Stoker, H. G., 'The Case for Apartheid', *Science and Freedom*, No. 9, 1957, p. 41.

well to remember, too, that there was a university and a great library in the mosque of Sankoré in Timbuctoo in the fifteenth century which drew scholars from all over the Moslem world, united by their religion and the Arabic language, just as the European universities of that time were united by the Catholic Church and the Latin language. Most of the students were black Africans. The sons of Songhay kings left the palaces of Gao and the children of the Touaregs deserted their great tents to receive an education there. There was a proverb in medieval Sudan: 'Salt from the north, gold from the south, and silver from the white man's country; but the word of God and the treasures of wisdom are to be found in Timbuctoo'. History and biology combine to convince us that apartheid is inconsistent with the very integrity of a university, and that whatever political reasons there may be for applying it outside universities, these reasons are simply not relevant to the situation inside universities.

Some of the universities in tropical Africa have reason to be grateful to the University of the Witwatersrand for its declaration of the sixteenth of April, because their integrity too is threatened by racial discrimination. It is inevitable that the universities of Nigeria (for example) should be regarded as nurseries of nationalism, for Nigerians rely on a new elite of graduates to lead them into Western civilization. Inevitably, too, Nigerians want their universities to be controlled by Africans and their students to be taught by Africans; and this is already causing tension. Intellectual leaders in tropical Africa know that cultural independence lags a long way behind political independence; they realize that African universities will have to borrow teachers and ideas from the white race for many years to come. But some political leaders in tropical Africa fail to realize this and are already pressing indiscriminately and short-sightedly for racial discrimination in the new African universities. I expect you have read reports of the speeches of African politicians calling for Africanization of academic posts. 'We have produced learned men and women in all walks of life' said Dr Azikiwe in his Visitors' Address to University College, Ibadan, recently. 'There is now no need for us to be running helter-skelter abroad begging for experts to come and guide us. . . .' What you may not know is the distress which this sort of racialism causes among the African intellectual leaders of

Nigeria, who want their professors to be the best they can get in the market, whether black or white, and who, so far, have prevailed. The stand which Nigerian intellectuals are taking, to keep their universities truly cosmopolitan, to prevent them from becoming mere staff colleges for African nationalists, would have been much more difficult to make if the open universities of South Africa had succumbed without protest to the legislation of 1957. So the sixteenth of April has significance not only here in South Africa, but in Ibadan and Nsukka and Zaria. It has significance, too, in Ghana, where two other universities are at present under siege.

This act of reaffirmation in the University of the Witwatersrand has another significance for the universities of the world: it serves to remind them that we are all members of a supra-national community. We serve our local communities by supplying an international commodity—scholarship, science, technology, medicine—on international standards. Therefore universities must be loyal to cosmopolitan traditions of what universities stand for; otherwise they fail to fulfil even their national purposes; the graduates they produce are off the gold standard of learning; as time goes on they have no standing and no easy access to the 'world bank' of learning. I am sure all academics in this country agree that over level of attainment among students and level of scholarship among staff there can be no compromise, no softening of standards. If a few of the great universities of the world compromised on this, the integrity of all universities would be in danger. What is not so widely understood is that there can be no compromise over the privileges and immunities of universities either; for any extensive compromise here, too, would endanger the integrity of all universities. That is why the stand which this University is making against the violation of one of its privileges is a defence not only of itself but of universities everywhere. For unless universities submit themselves to the same international standards of behaviour as well as of learning, the currency of scholarship cannot pass freely from one university to another. It may seem unjust, but it is true, that a university which is unfaithful to its own traditions in order to appease the state or to gain temporary advantage, debases the currency of its scholarship and betrays its own academic staff.

III

Let us reflect for a few minutes on one sentence in the paragraph from 'The Open Universities of South Africa' which I read to you at the beginning 'a society ... will not long survive if it cannot cope with the tasks of a new era'. The biological laws governing animal and plant populations are valid also for institutions: they must adapt themselves if they are to survive. This is certainly true of universities. Indeed in our generation universities are once again at the loom of history; they have become key instruments in a continual adjustment of society to its environment, and this is nowhere more evident than in Africa. This responsibility for deliberate adaptation sets difficult problems before those who administer and guide universities. On the one hand a university must appear to some people to be conservative and reactionary; for one of its duties is to transmit the values of Western civilization, and this requires it to give attention to the early Mediterranean civilizations which still provide us with our concepts of goodness, justice, and beauty: it is one of the tasks of a new era still to preserve Man's continuity with his past. On the other hand a university must not remain a mere replica of its ancestors, transmitting a petrified culture; it must be relevant if it is to survive. The history of universities exported from Europe shows that they do inevitably begin as imitators of European universities. This is what happened in America and Australia and this is what you can see happening in Dakar and Makerer and Khartoum and Salisbury. But if they are to flourish they must put down roots; and so, to 'cope with the tasks of a new era', a university must be responsive to its environment, but in responding it must not break faith with the supra-national brotherhood of universities and the traditions it inherits from them. How is the balance to be struck?

I have already answered half the question: over standards and privileges the university must be firmly uncompromising. And the other half of the question can be answered briefly by saying that over the currents of thought which run through it and the pattern of government it adopts, the university must be relevant to its own society.

What does this mean, translated into the curricula and statutes and regulations of a South African university? South Africa is a

democracy, allowing a measure of autonomy to its social institutions. Therefore over pattern of government, this means that the university must remain a self-governing corporation preserving the peculiarity which the universities of this country have adopted from Holland and Britain—that university teachers are not employees but members of a society. It is the absence of this feature from the Bantu university colleges which (among other things) disqualifies them from taking their place among the universities of Africa. As to the open universities, you of course have self-government. But I wonder whether you are running into the embarrassment which we have run into in Britain. When we started to found civic universities, in the middle and late nineteenth century, we put control of academic affairs in the hands of a Senate consisting of professors. This was genuine self-government, for in those days nearly all university teachers were professors; the rest were temporary assistants, sometimes even paid from the professors' own pockets. In 1862, in Queen's University, Belfast, for instance, about nine out of ten of the academic staff were professors. But in 1962 only just over one out of ten of the staff are professors; yet the constitution of the University has scarcely been changed: it is still a professor-run university, although the 'career grade' in universities has now become the lectureship. Of course there are some representatives of the lecturers on the Senate, just as there are here; but by no stretch of imagination could Queen's Belfast, or for that matter any British civic university, be regarded any longer as a society governed by all its members. It may well be that universities have become so large and expensive to run that this tradition will inevitably weaken in Britain. This is not the occasion to argue this point. What we must not do is to let the tradition go by default. It has been a great source of strength throughout the Commonwealth, and it is reassuring to see that some of the newly-founded universities are trying to preserve it, by contemplating constitutions which have proportional representation of all levels of staff on the committees which govern the university.

To us in Britain it seems that one other practical step which could be taken to preserve the tradition that university teachers are members of a society, not employees, is at the level of departments. In most of our universities departments have no official

existence anyway: they do not appear in the charter or statutes. But they are nevertheless the loci of power. It is in the department, over departmental decisions, that the young university teacher can, if he is given the chance, play the most useful and effective part in academic government. Many heads of departments in British universities already make sure that all departmental decisions are, as it were, syndicated decisions involving the whole staff, though I have to confess that in some departments autocracy still survives; and until universities legislate for the democratic conduct of departments, the danger remains that a profession whose members used to be regarded as partners in a society will slip into the assumption that its junior members, at any rate, are employees in a corporation.

I think this problem, as we see it in our universities in Britain, may be of some interest to you; because in a university under siege you have the long-drawn-out task of keeping up morale. And I suppose that any pattern of organization which reminds teachers that they are members of a society and not employees helps to consolidate the university's determination to recover its privileges.

Adaptation to preserve self-government is one practical problem facing modern universities. Another is responsiveness to currents of thought which are streaming through the nation. There is a universality about many subjects—chemistry, for example, mathematics and physics—which leaves little room for adaptation. To study these subjects the student must disengage himself from human affairs; the factor Man has to be eliminated. Even technology, though it is much closer to human affairs than pure science is, can be studied without much regard to the factor Man. But can any student nowadays—even scientist or technologist—afford to leave the factor Man out of his studies? The relevance of the factor Man for South African students is poignantly obvious. The overwhelming current of thought which surges through all the nations on this Continent is the westernization of the African people. It is the most sweeping culture-change the world has ever known. A few months ago I visited a native chief in a remote town in Western Nigeria. He sat holding the golden baton and fan which are the insignia of his office. He is still the spiritual as well as the temporal head of his people; an old man who remembers what his community was like before missionaries and traders came through

the forest tracks which led to his village, a man who still turns to the spirits of his ancestors for guidance and counsel, who hears voices in trees and waterfalls and the wind. He was watching a Western on television. His daughter is a graduate from London, who works in the Ministry of Finance. Two of his sons are doctors. Two of his grandsons are in an English school. To understand, and if possible to control this terrifying speed of adaptation is the paramount intellectual problem in the African Continent. We tend to think of it in terms of technology—the bicycle, the transistor radio, the aeroplane—and to cope with it in schools and colleges by teaching more science and engineering and technical skills; and to this end faculties of science and technology and medicine in universities endeavour, with great success, to keep themselves up to date. But this is only to scratch the surface of the problem. It is essentially a problem for faculties of Arts and social studies; and it is in these faculties (if a visitor from a European university may be forgiven for saying so) that there is the greatest need for adaptation in the universities of Africa. I am not familiar with the curricula in Arts faculties in South African universities, so I cannot comment on what happens here, but when I visit the universities of tropical Africa I find a social mimicry of European education which is at once touching and depressing. Every year Nigerians who are going to administer their people as district officers leave the university with honours degrees concentrated upon Latin and Greek and Ancient History. They have never studied the political and economic systems of their own people, nor their religions and social traditions and folk-lore, nor their languages. Questions such as how to transfer ideas from Ibo to English; what kind of ideas there are which cannot be transferred from the one language to the other; what is the impact on an African mind of European ideas of justice and equity; how systems of social welfare will replace the obligations of the extended family; what tensions occur in the African when he becomes urbanized and has to discipline himself to a routine and work either with Europeans or like Europeans; questions such as these are never studied by the majority of students in tropical African universities, perhaps not in South African universities either. Yet upon an understanding of such questions as these the fate of this Continent depends. Is it (for example) necessary to accept Western ethics and standards of

behaviour along with Western technology? Or will the African, like the Japanese, adopt Western material values while retaining indigenous spiritual values? Is the new Africa going to produce the most vulgar civilization the world has ever known—a nightmare of European gadgets without even the rudimentary European morality which still survives in our cities? Or will the Africans in the end do better than we have, preserving for themselves a relaxed urbanity and courtesy and rejecting our phrenetic money-making economy?

A university in a multi-racial community has unique opportunities not only to study this hurricane of culture-change (I know that a great deal of research is already being done); it has a unique opportunity, too, to ensure that every student is persuaded to think systematically about the problem, as a basic ingredient of his higher education. Nothing—not even independent Bantu states and segregated Bantu universities—will save the African from westernization. The only hope now is to observe in a scholarly way, and to understand, and perhaps in a small way to influence, the course of westernization in Africa. And this, I believe, is not a technological problem but a problem in the humanities. The experts who are competent to think about this problem come from faculties of Arts and social studies; and it is these faculties that need to respond to the call of the race-frontier in Africa, as the universities in the American mid-west a century ago responded to the call of the pioneer frontier in America. Given this response, understanding may come by close association of African and European elites, especially when they are studying the problem side by side; for the great dilemma of South Africa is not likely to be solved without fresh ideas, and it is from the universities that these fresh ideas are most likely to come. This brings me back once more to the words you have cut here in bronze. It is indeed the duty of this University to bring the black and white peoples of South Africa together in the adventure of scholarship, and especially in the critical study of the greatest human problem of our age; the peaceful coexistence of peoples of different races. May the day soon come when you can freely discharge this duty.



THE COLLEGE SYSTEM AT OXFORD AND CAMBRIDGE

JOHN ZIMAN

IT IS by no means certain that all the readers of the 'Cambridge' novels of Sir Charles Snow fully appreciate the institutional background against which those feline dramas are set. Indeed, looking round Britain, and the world, at some newly-created universities, one wonders whether those who have attempted to copy that unique set-up—the college system of the ancient universities—have really grasped what it is about. Like so many traditional ingredients of the British recipe for life, it *is*, so superbly, that those within it take it entirely for granted, and those outside entirely despair of understanding it at all. Sweet-sour reminiscences, high-table whodunnits, and romantically grubby undergraduate novelettes may give a whiff of the atmosphere of the place—but how does it actually work?

To write a full, precise and detailed account would be the work of years. It would demand the labours of a vast syndicate, for each college has its peculiar and secret ways, known only to its own Fellows. It would be a monumental enterprise, comparable with an account of the diplomatic system of modern Europe, or of the machinery of the American political parties. How can one bear to omit discussion of the subtleties of the balance of power in a college between Master, Tutor, Bursar and Fellows, or of the intricacies of land ownership that influence building policies, or of the conflicting roles of Proctors and Tutors in the discipline of undergraduates, or of the criteria that seem to determine which university lecturers become Fellows of which colleges?

This article can only be an attempt at a prolegomena to a sketch of an outline of such an account. I shall try to stick to bare facts, such as are well known and uncontroversial in substance (whatever their implications on an ethical or managerial plane). I shall

try to describe a 'normal' or 'typical' college, recollecting that not one of these fifty-odd unique corporations conforms to the stereotype. Where there are large variations, as in size and financial strength, or significant differences between the customs of the two universities, I shall try to mention them—but I beg for tolerance of conscious and unconscious sins of omission.

The Colleges as Corporations

The University of Oxford is divided into about 35 colleges, of which about 28 are exclusively for men, five are exclusively for women, and two (having no undergraduates) are mixed. Cambridge has about 24 colleges, of which three are for women. One must be a little vague in counting colleges, because there are institutions on the verge of formal recognition and others which have the title, but which are really specialized in atypical ways.

A college is an independent corporation, governed by its Master (or President, Dean, Provost, Warden, or whatever his official name is) and Fellows, who have power to amend its statutes, subject to final approval by 'The Queen in Council'. Occasionally Parliament has intervened to implement the recommendations of a Royal Commission and lay down conditions for the alteration of statutes—for example, the Acts of 1877 insisting that Fellowships need not be vacated on marriage, and of 1923 abolishing life tenure of Fellowships.

The university must formally recognize a new foundation before it may be admitted as a college, but cannot interfere in its internal affairs except where there may be a conflict of jurisdiction. Although all the members of a college are members of the university, and almost all members of the university are members of colleges, the university as such is a separate corporation, with its own hierarchy and administrative structure. Certain university offices, especially that of the Vice-Chancellor, are reserved for 'Heads of Houses' (i.e., Masters of colleges) and the Proctors are nominated annually by the colleges in rotation. Otherwise, the two realms do not legally intersect and the colleges are not subordinate to the university. The relationship has been aptly likened to 'what would have been the relationship between the States and the Federal Government if the South had won the American Civil War'.

The 'Governing Body' of a college—its Master and Fellows—

may number no more than a dozen, or it may be as large as a hundred. A typical figure would be 25, which is still few enough for most decisions to be taken at a regular meeting of the whole body of Fellows, where each Fellow has an equal voice and an equal vote. In the larger colleges, routine business is delegated to a small Council where most of the hard discussion may take place before a matter is sent to the whole Governing Body for final decision. However, the rights of the Governing Body are watched jealously, and one can fairly assume that any major action by a college has been approved by a majority vote of its resident Fellows.

To achieve such a majority, much discussion and consultation must come before the formal vote, and sub-committees proliferate. Most Fellows, even in a large college, are actively involved in its affairs, through membership of these committees, from Fellowship-Electors down to the tasters of wine. Yet the senior college officers—Bursars and Tutors—are allowed considerable freedom and responsibility in the exercise of their executive powers, and do not usually have to justify their administrative actions. The decision-making machine in a college does not fit neatly into the familiar sociological categories; in some respect it is as 'democratic' as a New England town meeting, while in other ways it is as 'autocratic' as an Anglican diocese.

This may be seen most strikingly in the position of the Master, to which there is no equivalent that I can think of in other universities. He is the permanent *ex officio* chairman of the Governing Body, with two votes and substantial statutory powers. By his office and authority he may come to govern the college in fact, although it may take considerable diplomatic skill to prevent a strong coalition of Fellows rising against him and blocking his path. The history of many a college is written in terms of the actions of its Master, whether in raising it to a position of high intellectual prestige or demeaning it by fomenting petty discords amongst the Fellows.

It is well known that the Master is elected by the Fellows—usually from among their own members, although it has become fashionable in recent years to look around for some distinguished figure from the academic or bureaucratic world who may adorn the college with his presence—and also bring into the cloister some

experience of another way of life. The emoluments of a 'Head of House' are not enormous, but he gets a private house in the college precincts, and enjoys roughly the same status in the traditional British hierarchy as a Dean or the Mayor of an ancient borough. Within the university his *ex officio* powers are not now much greater than that of a professor or other senior M.A.; he may become Vice-Chancellor for two years, but that does not offer much scope for reforming zeal.

Perhaps the most one can say about the Mastership of a college is that it is a post of high prestige which is not burdened by heavy formal responsibilities; what you make of it depends on who you are. Some Masters have devoted their lives to the affairs of their college. Some have been great scholars. Some have become important university politicians, or (at Cambridge where a Master may also be a professor) heads of large teaching departments. Many become active in the greater world, as members of Royal Commissions, as founders of new universities, as experts on under-developed countries, as trustees of charitable foundations—in short, as members of that important class of men and women with time and ability to spare for voluntary public service in an advisory capacity.

The older colleges were founded when the university was essentially an ecclesiastical institution, and their buildings and statutes are saturated with clericalism. But in spite of splendid chapels and official chaplains the colleges nowadays are secular in tone and free of religious tests. Latin Graces, statutory declarations on admission to a Fellowship, occasional special services in Chapel are customary procedures without serious significance to most of those who participate in them. A hundred years ago every don was a clergyman of the Church of England; nowadays you may find a militant atheist, an orthodox Jew, or, most likely, a common or garden agnostic. Not many Cambridge dons have felt that they should follow the example of the Fellow of Churchill, who recently resigned upon the decision to accept a donation for the building of a chapel.

The Bursar's Realm

Money is a far more serious matter in college business than religion. By the accumulation of benefactions over the centuries,

some of the colleges are very wealthy, with incomes from their endowments of £ 100,000 or more. At the other end of the scale, there are some which never quite got off the ground, and which have had to struggle along with an unearned income of only a few thousand pounds to supplement their undergraduate fees. This range of variation in endowment income is quite striking, and explains many of the differences between colleges, both for Fellows and for students. A rich college can afford to provide all sorts of fringe benefits for its staff, and can offer extra facilities—research studentships, common rooms, specialized teaching, travel grants—which smooth the way for undergraduates and B.A.s. In particular, a well-endowed college can perform more efficiently its major functions, for it can build (or convert) to house a high proportion of its members, and it can have a larger number of Fellows to teach them. A poor college may be forced, against its will, to have too many undergraduates (from whose fees it must profit) and too few Fellows.

The details of college finances are obscure, complex and multifarious. Buildings, kitchens, estates, scholarship funds, plate funds, special endowments, chapel endowments, tuition funds, establishment charges—no one but the Bursar can grasp them and interpret their cadences. A few colleges have professional full-time Bursars, but usually one of the Fellows undertakes this responsible office in addition to his ordinary duties as a university teacher. However, endowment incomes no longer come solely from land; the portfolio of equity shares which may now constitute a major proportion of a 'College Estate' may well be managed by a firm of stockbrokers.

The main task of a modern Bursar is to house and feed the junior members of the college. The number of these may vary, from less than 200 to the enormous 800 of Trinity, Cambridge. A typical size would be about 300 undergraduates and 50 or so B.A.s, research students, etc. The college buildings are likely to be a heterogeneous collection—vast and splendid ancient monuments, rambling, turreted, Victorian heaps of staircases, dull but practical pre-war blocks, and the very latest gimmicks of a fashionable contemporary architect. Keeping these buildings in good repair, and trying to adapt them to modern needs in the way of plumbing, catering and office accommodation, requires consider-

able time, thought and money.

The aim nowadays is to have all junior members living in. For many generations this has not been possible; indeed there grew up a customary institution of landladies, digs, licensed lodgings, etc. which is part of the traditional pattern of life at Oxford or Cambridge. But the affluent society, with factory jobs for women, has decimated the ancient tribe of landladies, and slum clearance is cutting into the clusters of small houses near the centre which were so convenient for digs. After a long period, when building was prevented by the War and its aftermath, there is great activity to provide college or hostel accommodation for as many undergraduates as possible. In new buildings the rooms are still grouped on 'staircases' rather than along corridors, but the old standard of a 'set'—separate bedroom and study for each man—has been reduced to a bed-sitting room of modest proportions. Indeed, the subdivision and conversion of old sets has been one of the most economical methods of bringing more men into college. The cubic content of some of those splendid old stone buildings has to be calculated to be believed!¹

The disadvantages of smaller rooms have to some extent been offset by improved plumbing and heating. The old custom of furnishing undergraduate rooms with odd pieces inherited from bygone inhabitants is dying; rooms in new college buildings are usually properly fitted out and tastefully decorated in contemporary style, to stimulate the aesthetic tastebuds of the young men and women who come to live in them. Room service by 'scouts' (at Oxford—male servants) and 'bedders' (at Cambridge—elderly and unprepossessing ladies) still continues, but not on the lavish scale of the past.

It is probably a bit more expensive for an undergraduate to live in college than in cheap digs, but he can expect to get a reasonably comfortable room and enjoy the amenities of social life. Here again there is a wide range, from vast and icy stone dungeons to chic, centrally-heated boudoirs, so that one cannot safely generalize, except on one interesting point: there is not much difference from one college to another in the basic charges for undergraduate

¹ A bachelor Fellow was somewhat abashed to be told that his rooms in college were larger than the five-bedroomed house being built for a married colleague.

lodging and living. No prospective student need make his choice of college on these grounds, although, of course, the traditional style of life may be more lavish in one place than in another.

College Teaching

The colleges exercise a paternal vigilance over the lives of undergraduates. The rules governing the closing of college gates at night, proper dress for dinner in Hall, attendance at tutorials or supervisions, etc., are not very strict, and there are various customary procedures by which they may in fact be broken. Discipline is in the hands of special college officers—Deans or Tutors—who are usually concerned only that peace and surface decorum be preserved in the community. Their real problems are not the petty offenders against minor regulations but the men and women who show evidence of having fallen into desperate patterns of behaviour—drinking, compulsive spending, flagrant sexual irregularity and so on. At Oxford this social welfare work is spread over all the teaching Fellows, who are all called Tutors although some may specialize as Moral Tutors. At Cambridge there may be only two or three Tutors in the college, each looking after a hundred or so undergraduates. Students with problems of study, of health (physical and mental), of finance, of careers, are expected to seek help from their Tutors, who may be relied upon to go to endless trouble trying to advise and assist them.

This is probably one of the most important functions of the college, and sets Oxford and Cambridge apart as universities where every student knows that there is a responsible senior person who knows him (or her) personally and who will stand *in loco parentis* for him if he gets into any kind of trouble. Combined with the personal system of teaching, it means that he is not a face in a class but an individual, about whom much can be written in references, whose career will be watched with interest, and who can feel that the senior members of the college are not just his teachers but his friends.

But perhaps enough is known of the facts and fictions of undergraduate social and private life. The modern colleges are also active teaching institutions. Undergraduate instruction at Oxford and Cambridge is divided into two almost distinct sub-systems—lectures, demonstrations and practical classes given by the university,

and tutorials (Oxon) or supervisions (Cantab) arranged by the colleges. Students are expected to benefit by both types of instruction—especially the college part where attendance is strictly enforced. But the final examination is set by the university, and the result does not depend at all on any record of formal attendance at tutorials, where nothing is gained or lost, by good or bad work, except the good opinion of the Tutor or Supervisor.

The image of a tutorial as the reading of an essay by the student to the Tutor, followed by criticism and discussion, is probably well established in the public mind, but nowadays this ideal of one student plus one teacher for one hour per week is not invariably achieved. It is so prodigal of teaching time that pupils are often taken in pairs, or even larger groups. This is especially the case in some courses of study where there are several different subjects to learn (e.g., Politics, Philosophy and Economics at Oxford, the Natural Sciences Tripos at Cambridge). A student may be attending several tutorials in the different subjects each week, as well as numerous lectures and laboratory classes.

Although college teaching and university lectures are directed towards the same end—the achievement of a high Class in the Honours examination for the B.A. degree—they are not usually coordinated in any deliberate way. In most Arts Faculties the college is the dominant partner; in the Sciences the university teaching is the more important. Liaison is only achieved through the two types of teaching being done by the same people. In principle the Tutor or Supervisor is a university lecturer, and gears his college teaching to the work of the university faculty of which he is a member. But of course as a university lecturer he will most likely be concerned only with a specialized branch of knowledge, and machinery may not exist by which he can know what is being taught, in other branches of the subject, to his college pupils.

The actual Supervisor may not be a college Fellow or university lecturer at all. A great deal of college teaching is in fact done by research students, by wives of dons, by lawyers up from London for the day, by all sorts of people. At a rate of a pound or so per hour it yields a modest income to these impecunious classes, and helps to share an intolerable load on the college Fellows. Even with this aid, an Oxford Tutor or Cambridge Director of Studies may be hard put to it to 'farm out' his flock, and the teaching

ability of, say, a research student is not usually examined very strictly before he is entrusted with pupils. Of course it is good practice for him and he may be more conscientious and intellectually fresh than a bored old don, but he is given no training at all, and has to rely upon the memory of the way his own instructors worked on him when he was an undergraduate.

Nevertheless, although the whole system is deliberately informal and amateur, in the major subjects there is a core of experienced college teachers holding it together and setting standards. A good reputation as a Tutor or Supervisor may be as important a qualification for election to a teaching Fellowship as scholarly prowess. The standard of college teaching is as variable as the abilities and skills of the teachers, but it is always done seriously and conscientiously—and the quality of the best is superb. Whatever the pedagogic merits of some of the techniques, such as the reading of essays, there is no doubt of the importance of the friendly personal contact that it makes between individual students and individual members of the faculty.

How do the Colleges choose their Members?

The senior members of a college are concerned with the junior members in another most important business—their admission. To have studied at Oxford or Cambridge, whatever the Class of degree obtained, is a badge of status in British society, and the competition for places is ferocious. Admission to the university as an undergraduate can only be achieved by admission to a college. The university entrance requirements are no more than a nominal barrier for the ordinary schoolboy, and the university as such takes no part in the selection of its members. Whoever is admitted by a college and possesses the formal qualifications for matriculation automatically becomes a member of the university.

With the exception of medicine, and some advanced scientific subjects, there is no official channel for the university to learn from the colleges their intentions with regard to undergraduate numbers, nor is there any machinery by which the university may induce the colleges to take students in special subjects where extra facilities become available. It has happened, for example, that the university has established, at great capital and recurrent cost, a new school of study, such as Veterinary Medicine, only to find

that not sufficient students were admitted by the colleges to fill its lecture rooms and laboratories. It is quite possible for the university to decide collectively to expand its staff and teaching facilities whilst the colleges may individually decide to reduce their intake of undergraduates.

The mechanisms of student admission to the various colleges are complicated and varied beyond description. An ordinary undergraduate—a 'Commoner' as distinct from a 'scholar'—may be accepted in one of several categories. He may have performed quite well in the Scholarship Examination; he may have passed a special College Entrance Examination; or he may have been successful in a combined operation involving GCE results, headmaster's report, and interview. Some colleges insist on all candidates sitting for the Scholarship Examination, some have instituted special Entrance Examinations, some rely heavily on interviews, some have great faith in the headmasters of particular schools, some Tutors use hunches, others exercise intuition. In some colleges the Senior Tutor has almost complete authority over admissions; in others he is no more than secretary of a committee of Tutors, Master, Directors of Studies, etc., all considering each candidate. There are traditional links with schools, old-boy networks of schoolmasters, and queues of parents seeking by every means to place their boys at their old college. The Vice-Chancellor of Cambridge himself has recently remarked that it was misguided to attack the 'Oxbridge system' of admissions, because there is no system.²

The reason for this anarchy is not difficult to discover. The right to choose its own members is considered the most important prerogative of a college, and is so jealously guarded that voluntary cooperation between the colleges is almost impossible to negotiate, even on such practical matters as a common application form. The Tutorial Representatives Committee, which is the only official organ of consultation between the colleges on student affairs, has no executive authority, and moves only unanimously. The lack of a coordinating body has left each college to face alone, and to devise its own procedure to deal with the unprecedented

² But Oxford, as I write, seems to have taken a big step towards rationalizing the procedure for selection—a good example of the principle of over-ripe time!

pressure of applications in the past 10 years. This flood is the result of the vast increase in the number of children reaching the top of the secondary school system, and the action of the government in providing automatic and complete financial aid for any boy or girl accepted by a college. Admissions procedure is now one of the hottest topics for discussion of university and college reform, so that big changes may occur in the 'system' before long.

The only region where the colleges act together is in the Open Scholarship Examinations, which are organized in 'Groups' of five or six colleges. The papers are set on the GCE A-level syllabus (that is, the usual final school examination) but at a more sophisticated level, so that candidates usually sit them during a third year in the sixth form after they have actually passed the GCE. The procedure by which scholarships are allotted, and candidates shared among the colleges in the Group in the order of their preferences, is a minor miracle of administrative ingenuity.

These scholarships were originally of sufficient substance to keep a poor boy (Isaac Newton, Samuel Johnson) at the university, but nowadays their pecuniary value is small (by a recent decision, at most, £60 a year) and essentially irrelevant in a student community which is very largely supported by the state.³ Scholars have certain small college privileges—they wear slightly different gowns, may live in college all three undergraduate years, and things like that. But the real attraction is glory. To win a scholarship at a famous college is to acquire kudos for oneself and one's school. One gets one's name in *The Times* and on the Honours Board of the old Alma Mater.

From the point of view of the college, the Scholarship Examination is supposed to be the means of entry into the university for a man who is intellectually brilliant but socially uncouth. Since the Awards go mainly to the products of those public schools and few grammar schools who can afford to pay for the very special teaching needed by all but the best candidates in this highly sophisticated examination, this supposition is difficult to check. One suspects that such men would choose themselves in any system of admission where weight was given to intellectual achievement.

³ Paradoxically, they have become of more value to the sons of rich men than to the poor. The means test on parental income for government grants is more severe than for Open Scholarships!

It is probably more significant to note that the Scholarship Examinations provide the most important arena for the competition between the colleges for the best students—that is why the rules for the working of the Group system have to be laid down so rigidly.

The B.A. Table

Between the undergraduates and the dons fall the research students. The position of graduate students in the college system is not well-defined. They are an anomaly of the last 50 years, whose existence as an extensive separate class has not yet quite received recognition. Those who are graduates of the college are treated like the grown-up sons of the house, free to come and go more or less as they please. They usually have to live in lodgings, or share bachelor flats in the town, and dine at a separate B.A.s' table. Most colleges also admit research students from other universities in Britain and from all parts of the world, who have come to study at Oxford or Cambridge. The attitude towards these 'foreigners' is variable. Very few colleges can accommodate them in college buildings, where undergraduates normally have first priority. The tutorial and proctoral machinery of discipline and welfare is not well geared to deal with them, and these older men are not usually accustomed to the paternalistic attitude of the college authorities. Only a few colleges make deliberate efforts to integrate them into college life, by letting them live in, lunch and dine freely, and run their own common room.

In this respect, married research students are worst off. They are bound by university regulations to belong to a college, and may find themselves paying substantial fees for facilities which they cannot use without disruption of their private home lives. Moreover, there is heavy demand for furnished flats and houses, so that they may be forced to live in expensive, dingy discomfort in a far suburb whilst they see healthy undergraduates flourish in cosy college sets. The need to build flats for married research students is now widely recognized by colleges and by the two universities.

It is worth noting that the teaching of research students is almost entirely in university hands, through the Board of Research Studies and the various faculties. The primary responsibility for the admission of a foreign student to do research rests with the

faculty authorities. Admission to a college is obligatory, but since there is in each university a special institution that counts as a college for this purpose, and which will admit almost any research student in the last resort (although it may not be able to offer much in the way of facilities) this is no real barrier. On the whole, the colleges do not compete so fiercely for research students as they do for undergraduates, though not a few Fellows have come from just this source.

Perhaps one should recognize that the growth of research as a main function of the university has put serious strains on the college system. Where specialized apparatus and buildings are essential, as in the Natural Sciences, central university institutions have been created, where research students and staff spend most of their days. The student is likely to find his intellectual and social interests amongst his scientific colleagues at his laboratory, rather than in a college where he may only occasionally eat a meal. His research supervisor may not be a Fellow of a college—but he is always at hand, working at the next bench, and therefore far more important and effective as friend and adviser than the Tutor who is nominally responsible for him, and who invites him to lunch once a year.

On the other hand, in Arts Faculties, where much of the research is necessarily done in the seclusion of a library or a private study, the need for such Faculty buildings has not seemed urgent precisely because the colleges exist; dons have happily remained in their own old rooms working in isolation from their supposed colleagues. Thus, the research students who are most in need of contact with dons and students in their own field have been left to fend for themselves. The colleges may provide them with a social life, but have tended to inhibit the growth of university institutions at the graduate level. Some colleges have recently been created (Nuffield and St. Antony's at Oxford, Churchill at Cambridge) where specialized research interests are supposedly being fostered, but there is no obvious sign that these institutions can resolve the conflict of interests that naturally arises between the specialized faculties and eclectic colleges.

The Governing Body

We now come to the most important category of members of a

college—the Fellows. By their seniority and the relative permanency of their position they set the tone of the college through many generations of undergraduates. They are its Governing Body.

Generally speaking, there are three categories of Fellows: Research Fellows, Professorial Fellows and 'Official' or 'Tutorial' Fellows. The position and status of the first two categories is easy enough to describe. Research Fellows are usually young men or women elected within a few years of taking their first degrees—in North American usage, they are just 'post-doctoral'. The tenure of the Fellowship is limited and the stipend is modest, being of the order of the salary of an assistant lecturer in an ordinary British university. For an unmarried man the privileges of free rooms and dinners are, however, valuable, and the opportunity of undisturbed concentration on research for three or more years is highly prized. A Research Fellow is a member of the Regent House of the University—i.e., he is treated as a faculty member—although he may not necessarily be invited to give any lectures or do any other university teaching. On the other hand he is likely to do quite a bit of college teaching, paid by the hour, and may well hold a junior college office, such as Dean, so that his freedom to do research may not be absolute.

Election to a Research Fellowship is usually by competition, on the basis of a dissertation or written examination. Some are open only to graduates of the college offering them, others only to graduates of one or both of the ancient universities, and a few are simply open to the world (but then usually subject to age limit). The fields of research are sometimes specified; otherwise they are tenable in any academic subject. This leads to great difficulties for the Electors, when trying to compare candidates in widely differing fields, but the criterion is always the achievement, or the promise, of scholarly distinction—as one might say 'Is this man likely in due course to become a professor in a British university?'

Generally speaking Research Fellowships are a charge on the endowments of a college, and are not subsidized, directly or indirectly, by the university. For this reason, the Cambridge colleges are able to support more research Fellows than the Oxford colleges, because their financial position is easier. From the point of view of the college, there are considerable advantages in being

able to retain a brilliant graduate of the college, or to attract a promising man from another college, until an opening occurs for his election to a Teaching Fellowship. Indeed, this is the mechanism which has allowed many Cambridge Fellows to spend their whole lives in the very same college which they entered as undergraduates.

At the other end of the *cursus honoris* are the Professorial Fellowships, filled by the university professors and other senior personages such as the Registrar and the University Librarian. At Cambridge there is a complex system by which each college is induced to take up its quota of professors, so that anyone who is not already a Fellow of a college is bound to get a Fellowship within a short time of his appointment. At Oxford the same goal is achieved more mechanically by attaching each professorial chair to a college, where the newly-elected professor automatically becomes a Fellow. This leads to more movement between the colleges, but raises problems when the candidate for a chair is a woman.

Professorial Fellows have full voting powers in the college, and may well be very powerful on committees such as those that elect new Fellows but they draw no college stipend, are not permitted to do college teaching nor to hold office as Tutor, etc., and are supposed to devote themselves entirely to scholarship and university politics. However, the privileges of college rooms and board may be of great importance to an unmarried man or woman; their seniority allows them considerable advantages in this respect.

But the heart and soul of the college are its Teaching Fellows ('Official' Fellows, 'Tutorial' Fellows), who hold their Fellowships by virtue of a college office as Tutor, Director of Studies, College Lecturer, Bursar, etc. This is the 'career grade' of the donnish profession. It implies permanent tenure to the retiring age, and is usually held along with a university appointment as Assistant Lecturer, Lecturer, or Reader.

In Oxford the college Fellowship is the prime appointment; the college pays the basic stipend, which is almost always supplemented by a university lectureship. At Cambridge the university job is primary, and the supplementation by the college may not be very great. This leads to a curious and interesting difference in attitude between the two universities. Oxford colleges tend to appoint their

Teaching Fellows rather young, on promise as scholars and on their evident qualities as teachers—and then work them very hard at undergraduate teaching. At Cambridge men ‘hang on’ as Research Fellows, and assistant lecturers, often into their mid-thirties, hoping for a vacant university lectureship that will give them tenure and make them eligible for an Official Fellowship. It is a nice point whether the psychological cost of this uncertainty is recouped in greater contributions to research and scholarship. From the college point of view, the Cambridge system puts less financial burden on the endowments, allowing greater freedom for the support of such desirable institutions as Research Fellowships—but has to be paid for by subservience to the decision of the appointments committees of the faculties.

What is it worth to be a Fellow?

We have already considered some of the things that Fellows do for their colleges. They provide the administrative and educational staff and, as the Governing Body, control its affairs. They act as Tutors, part-time Bursars, Praelectors (the discovery of the duties of this office we leave as an exercise to the reader), Librarians, Vice-Masters, etc., etc. There are all those committees to be staffed, and all those little jobs to be done around the place—electing Masters, examining for scholarships, tasting wine, choosing incumbents for Church livings, designing new buildings, entertaining visiting schoolmasters, and so on. The load of such little jobs can be heavy, and the extra stipend that they may earn is seldom an adequate reward. This is especially true of small colleges, where there may be very few Fellows to share the various offices that must be filled. It is rare to find a don at either university who can maintain all three spheres of activity—university teaching and research, college teaching, and college administrative office. For this reason, it is not easy for scientists, with rather definite responsibilities for teaching and research in the university sphere, to take on big college office. The fact that Senior Tutors are usually Arts men is not a conspiracy—it is a consequence of the general tradition that lectures are not considered so essential in the curriculum of Arts students.

What do the colleges do for their Fellows? In Oxford they are their basic employers and pay the greater part of their stipends.

If unmarried, the Fellows receive free rooms and meals. If they are married, they will usually have a study room in the college, and free dinners. Some colleges pay extra marriage and children's allowances, or offer service tenancies, at low rents, in college houses. However, these perquisites do not usually amount to a large sum, calculated in money terms, and scarcely cover the unpaid time and labour that most Fellows devote to college affairs. It is true that in some colleges the more senior teaching offices (Director of Studies, Tutor, etc.) may carry good stipends, and perhaps consume less time than it would take to earn the same sum at piece-rate undergraduate teaching, but the picture of a Fellowship as a well-heeled sinecure is at least half a century out of date.

The real rewards are much more psychological and social. A Senior Common Room is an excellent club—physically agreeable, smooth-running, served by loyal and experienced servants. To be able to walk across the grass, to entertain one's guests at High Table in an ancient Hall, to sit over port and claret by candle light, to enjoy undisturbed possession of a newspaper in a deep arm-chair, to gossip about the weather, the food, other people, and the academic world—these traditional pastimes of the British upper class can nowhere be better enjoyed than in the colleges of the ancient universities.

On the other hand, the social life is not so perfectly geared for married men; the celibate tone is not congenial to every taste; and any move to admit women as guests to Common Rooms and the High Table is still considered daring and radical. A few colleges have made minor concessions on this in recent years, so perhaps there will be a considerable change in time. Some of the most recent foundations even have both male and female Fellows, but this heterodoxy has not been permitted to spread to the undergraduate body. Dons' wives complain that their husbands are never at home—especially during Term, when college teaching goes on till dinner time, and it seems convenient (and agreeable too) to dine in Hall. They have their occasional beano in college and get around to cocktail parties, private dinners and lunches, but they do not truly participate in the central club life of the college.

In the end, the rewards of a Fellowship are less tangible than cash or collations. It is an academic position of ancient and

honourable status in a corporation whose ancestry may stretch back into the mists of medieval history. It belongs to the traditional gentle society of England, as much as any country estate or regiment of the line. To the outside world, on the B.B.C., in the Sunday papers, at a school prize-day, one is clearly someone of importance—more important indeed than, shall we say, the Professor of Antiquarian Metallography in the University of Wigan (founded 1961) or the Principal of the Puddletown College of Arts and Technology, even though either one of these gentlemen is likely to be more distinguished academically, intellectually and administratively than your average don.

From the inside, this attention is flattering. It is reassuring to have been elected to such a club, to belong to such a society. The strength of the system is the grateful loyalty given by the Fellows to their colleges—a loyalty that transcends the ordinary attachment of individuals to the institutions where they work. It may be the domestic atmosphere of the place, so that one comes to accept and defend it with all its weaknesses, as one does one's own family. It may be the remnants of the bachelor tradition still found in many colleges and providing an inner core to the Governing Body. It may simply be the pull of an ancient corporation on persons who are unconsciously seeking a cause to serve with selfless devotion.

For the university this blind loyalty to the colleges creates tensions, and is a fundamental weakness in a time when strong pressures are acting to modernize, democratize, remake and reform our system of higher education. The university administrative machinery is clumsily geared and deferential to the interests of the colleges—as symbolized by the rule that the Vice-Chancellor himself must be the head of a college so that he may feel bound, in a clash of interests, to take the side of the colleges (where, after all, he is permanently in office). The problem of getting twenty or thirty separate bodies moving together, of consulting and consoling them all, is daunting to the most subtle 'university politician'. The result is, very often, that nothing is done at all in the way of coordination and cooperation, so that colleges and university drift apart in their attitudes and procedures, even though the very same gentlemen, wearing different hats, govern them both.

How are Fellows made?

The mystique of the college system is nowhere more strongly in evidence than in the election of Fellows. Since the Master and Fellows *are* the college, the procedure by which they perpetuate themselves is of vital significance. In a small college, the whole Governing Body may participate in the election. In the larger Cambridge colleges this delicate task is delegated to a committee—the College Council or the Fellowship Electors—whose composition then itself becomes a grave matter for discussion, nomination and election by the Governing Body.

The procedure in the election of Research Fellows follows the normal lines of academic appointments—dissertations to be reported on by referees, letters of recommendation to be weighed and sifted, perhaps an interview. The usual problems of evaluating and comparing academic reputations are involved—problems that are familiar in any profession where promise and achievement cannot be made quantitative and where the work of each individual is unique. The election of Professorial Fellows is also a relatively straightforward exercise, even in Cambridge where the quota system allows some room for manoeuvre. A college with a place to fill may wait until it can grab a particularly desirable person who happens to be elected to a chair, or it may hope that one of its existing Fellows is promoted from a university lectureship or readership.

It is in the election of its Teaching Fellows that the system enters into the higher realms of subtlety. In Oxford the problem is clear enough. Since Tutorial Fellowships are usually of considerable permanency, a relatively young man has to be chosen on the strength of his promise as a scholar, as a teacher and as a member of an intimate club. With few Research Fellows to choose from, this usually means an appointment of a graduate from another college, with all that that implies in strangeness and uncertainty. If the college waits too long, then the best men will be snapped up by other colleges. If it jumps too soon, it may saddle itself for life with a boring dud. A small institution has to pay heavily for its mistakes.

At Cambridge, and in scientific subjects at Oxford, these obvious difficulties are complicated by the need to fill a vacant teaching post with someone who is actually, or very nearly a permanent

teaching officer of the university. Since the candidate must also be known to be a good scholar, a good teacher and personally acceptable as a member of the High Table, it is seldom that a long list of names is on offer. Is there a chance that a better man will be available soon? Are other colleges likely to get in before one? How urgent is the teaching need? Is young Jones, an amiable Research Fellow of the college, going to get a university appointment, so that he may be 'kept on'?

From the point of view of a potential candidate, also, these elections are delicate and unsettling. The vacancy is not usually advertised, so that he cannot be an open candidate. In principle he is not supposed even to know that he is being considered until he receives a letter inviting him to accept election. But he cannot fail to know that he is in the eligible class and he must wonder occasionally at an invitation to dine at a strange college by a none-too-familiar colleague, and feel some pangs now and then at the announcement of the appointment of someone else in his own subject at a college where he knew that a vacancy existed. Even if he is highly acceptable, it may not be easy to decide against an actual offer from St. Mark's, a dim and dull place so far as he knows, in the hope of election at St. Luke's, a far more distinguished institution. For a man appointed to a university post at Oxford or Cambridge from another university, the first five years, when he is earning tenure and making friends, have a disturbing, uncertain tone, while he waits for the call that may never come.

Indeed, for many who are eligible for Official Fellowships, the call does not come. Of the whole staff of Cambridge University in the grades of Assistant Lecturer, Lecturer and Reader, and their equivalents (Assistant Registrars, Librarians, Research Officers, etc.) some 400 out of 1,000 are not Fellows of colleges. The situation in Oxford is apparently much the same, although not yet so clearly documented. Both universities have expanded rapidly in students and faculty members since the War; the colleges have allowed their undergraduate numbers to grow without increasing their complement of Fellows in proportion; the foundation of several new colleges at each university has not been sufficient to keep pace with the proliferation of new teaching departments and research groups.

In Cambridge it is not even mandatory for a teaching officer

of the university to belong to a college. If he (or she) is not a Cambridge graduate, then he may be admitted to the status of M.A., by virtue of his office, without the sponsorship of one of the constituent societies of the university—a strange anomaly when one recalls the rigidity of the rule that no one may become an undergraduate or research student unless he has been admitted to a college.

However, most members of the university faculties are, if not Fellows, at least 'attached' to a college. The facilities and privileges that go with this status are very variable. It would be normal to have the right to lunch in college during Full Term (about 30 weeks of the year) and to dine at the High Table once a week, on certain nights, at one's own expense. The use of the Common Room before and after such meals and the precious privilege of walking on the college lawns would go with this. But rooms in college, free dinners, the right to entertain guests and any sort of say at all in the affairs of the college would not be usual. At Oxford there is a more subtle differentiation, for there is a caste of dons known as 'College Lecturers', paid by the college, given responsibility for undergraduate teaching and enjoying many of the material facilities of a Fellowship, without the one significant privilege of a voice or vote as a Fellow. At both universities it is possible to be a resident M.A., holding responsible, even distinguished, university office, with no more foothold in his 'own' college than the right to dine there twice a term. Indeed a 'senior' member of a college may enjoy his position less than the most junior freshman undergraduate.

It is only fair to add, however, that this situation, so inconsistent with the ideal of a 'collegiate university' and so disruptive to its social harmony, is recognized as scandalous, and attempts are being made to put it right. The discontents of the non-Fellows, the feeling of being second-class citizens, have come welling to the surface, and a commission of inquiry—the 'Bridges Syndicate'⁴ at Cambridge—has reported on the problem and suggested means of solving it. It is not yet clear whether anything will come of its proposals.

⁴ 'Report of the Syndicate on the Relations between the University and the Colleges. Report of the Commission under the Chairmanship of Lord Bridges.' *Cambridge University Reporter*, No. 4289, XCII (13 March 1962) 28, pp. 1074-1152.

PART 2

**UNIVERSITY: DEVELOPMENT AND
PROBLEMS**

1944

THE PROCEEDINGS OF THE
1944

THE DEVELOPMENT OF UNIVERSITIES IN SOUTH-EAST ASIA TO 1960¹

T. H. SILCOCK

SOUTH-EAST ASIA is an excellent region for a comparative study of universities under pressure. In all the countries of the region the pressures are rather similar in their essentials. On the one hand they all suffer from the problems of the delayed impact of the industrial revolution on an area broken up geographically—and not less by history—into small and separate units. They all have rapidly increasing populations, imposing great strains on their educational systems. They all want to expand their supply of professionally qualified people more rapidly than conditions allow. They are nearly all trying to create nations out of culturally diverse populations, and hence face problems of language and historical identity. They all feel they need to study the techniques of the West but find the effects of this study disruptive of their own traditions and social structures. Thus they all have student populations which are both influential and disoriented, both desperately anxious to change their own societies and resentful of some of the changes introduced by others.

At the same time, the universities of most of these countries are dependent on a university community outside their own borders. Their universities have strong inducements, both psychological and practical, to conform to quite detailed codes of behaviour laid down in universities which originally developed in quite different environments. They try to make their entrance standards conform to an overseas pattern, so as to receive recognition as full universities. They follow the curricula of foreign pass or honours degrees, frequently, no doubt, substituting their own history or

¹ The author left South-East Asia in 1960 and no attempt has been made to bring the material up to 1964. A few recent developments are recorded in footnotes but no claim is made that the record is complete.

fauna for that of the model they follow. They develop institutional structures originally designed to secure autonomy for scholars in another culture and feel aggrieved if these do not achieve the same results.

Yet the great interest of the region is that the countries are all different, and they also have historical relations with several different university traditions abroad. The strains take different forms, create different distortions; but they are also distortions of different models.

First we must emphasize that the situation is a very new one and is changing very rapidly. By 1960 there were some 60 universities in South-East Asia. More than half of them have been established since the Second World War.

When the war began the one university in Indonesia had barely started. By 1960 there were eight state universities, with 37,000 students, and even more private universities. Official figures did not separate the students in private universities from those in separated teaching faculties and other colleges but the total number of students was about 100,000.

In the present territories of Cambodia and the Republic of Vietnam there were no universities before the war, though students used to go to the University of Hanoi, which is now within the communist area. There are now three secular universities as well as a Buddhist university and a small Catholic one.

In Burma and the Philippines the increase in student numbers to 1960 was only slightly short of tenfold and may well have already reached that figure.

Elsewhere in the region the rate of increase is less dramatic but, if the post-secondary colleges in Hong Kong are included,² there is nowhere in the region where the rate of increase in student numbers during the past decade is less than fourfold.

This tremendous surge towards higher education is the result of the great expansion of secondary education in the pre-war decade, the increased appreciation of education following the turmoil of the Japanese invasion and the consequent willingness of newly independent countries to pay more for education.

² Now being federated into a second university.

Burma

Burma has two universities, Rangoon and Mandalay. But Rangoon has intermediate colleges under its control in different centres notably Moulmein and Magwe, which are expected to grow into universities later.

The University of Rangoon has seven faculties in all: Arts, Science, Education, Law, Medicine, Agriculture and Engineering, and about a third of the students seek professional qualifications. Medical standards are recognized by the General Medical Council of the United Kingdom; most other professions are regulated by local professional bodies.

The university grew out of a government college, founded in 1880 and affiliated to the University of Calcutta, and Judson College established by the American Baptist Mission.³

Burma's other university, the University of Mandalay, was founded in 1958, from the former College of Agriculture, a pre-war intermediate college of the University of Rangoon, which after the war had been granting degrees which were well below the standard of the honours degree. Student numbers increased from about 150 at the end of the war to some 2,500 in 1960. The university has its own medical and agricultural schools, as well as much larger Faculties of Arts and Science.

In Burma the main problem is one of badly disoriented student leaders exploiting a strong political position to prevent any genuine instruction and of politicians chronically suspicious of foreign-educated professors whom they regard as restrictive and overbearing in their attitudes and temperamentally unsympathetic to Burmese nationalist and egalitarian aspirations.

From its very beginnings in 1920 the University of Rangoon suffered from inadequate supervision and student indiscipline. Nearly all the leaders of modern Burma were educated in the University of Rangoon rather than (as in so many countries) in Europe or America; yet the university as an institution is now thought by many Burmese to have identified itself insufficiently with the national aspirations to independence so that national

³ Furnivall, J. S., *Educational Progress in South-East Asia* (New York: Institute of Pacific Relations, 1943), p. 58; Nyi, Maung Nyi, "The University of Rangoon: A Factual Survey I", *New Burma Weekly*, 19 July, 1958.

traditions are identified more with student strikes against it than with its contribution to their training.⁴

Commission after commission has examined the university. Its actual and potential importance in the intellectual and cultural life of Burma is beyond question, but the attitude towards it of politicians and the press is disgracefully trivial. For example a rule was made that students failing three times in certain examinations should leave the university; students struck, and the press made it an issue of national importance. There has also been a strike at Mandalay against non-recognition of its medical degree by the General Medical Council of the United Kingdom.

The explanation of this lack of appreciation of the intellectual standards of a university is of course not difficult to find: where both Aung San, the national hero, and the Prime Minister⁵ first attracted public notice through a student strike, and were then swept by the war into underground revolutionary activity, it was natural that the public should see the university authorities primarily as defenders of reaction and tyranny.

The few Burmese scholars, who remained in the university after the European professors left, have had to deal with a tremendous expansion of student numbers, from just under 2,000 before the war to over 10,000. They did this by expanding very considerably the number of teaching assistants and assistant lecturers, using them for various kinds of tutorial work, while developing large classes at all levels. Inevitably standards of teaching have fallen. Moreover, Burma has had little external help in university work, partly because of its political posture and partly because the government has cared little for university standards. Nevertheless the academic record of the University of Rangoon—both its former professors and its former students—compares favourably with that of any university in South-East Asia.

The attitudes of the academic staff have been strongly influenced by British traditions. They are anxious to maintain the independence of the university as an institution; and their educational aim is broadly to restore pre-war academic standards.

⁴ Nyi, Maung Nyi, "The University of Rangoon", *New Burma Weekly*, 16 August, 1958, p. 26 and "A Short History of the University of Rangoon", *Rangoon University Annual Magazine*, III (1957-59), 9, pp. 183-188.

⁵ The reference is to U Nu, Prime Minister until the military *coup d'état*.

This raises the question of the viability of pre-war standards. It is arguable whether it is more important to generate a sense of ignorance and some rudimentary acquaintance with techniques (even antiquated ones) for finding out new information from nature and from foreign books than to increase factual knowledge. The pressures are real and if expansion is needed this change of attitude can be purchased only at the cost of quite considerable sacrifices in the obviously verifiable content and up-to-dateness of the knowledge acquired by students.

Great though the expansion of the university has been, the number seeking admission has expanded far more; the failure rate in the university matriculation examination must be among the highest in the world with less than 4 per cent of those taking it securing admission.

It is doubtful whether any selection techniques can operate effectively either to generate values or skills or to find those most susceptible to the former or capable of the latter, when the ratio of those selected to unsuccessful candidates is so low. There is great scope for influence here but the procedure needs modification without necessarily adhering to United Kingdom practice.

In Burma as elsewhere the leaders of the academic movement everywhere have always had to work in an environment in which they know more about, and care more for, the values of independent inquiry than either the mass of their students or those—the church, the state, patrons or parents—who pay for education. Learning can never be pursued as a vocation unless some of the learned are prepared to educate their masters as well as their pupils, starting from the aims which the uneducated already have and showing how objective knowledge and free inquiry can help to further these aims.

In Burma, the formal independence of the university has been restricted by the influence of student leaders. This tended to destroy the power of the academics to use the curriculum and selection process to promote the values of learning and, in addition, the result may be so great an alienation from the objectives of politicians that the power to educate them also may be sacrificed. In Burma it is necessary to maintain and use control over the curriculum and the selection process by greater understanding of the aims of national leaders who can gain popular support.

Thailand

Traditionally, learning in Thailand was transmitted by Buddhist priests and in the royal palaces. Kings based their power on learning and on the Buddhist religion as well as on their tenure of the land.⁶ Scientific knowledge was introduced gradually under royal patronage: King Mongkut spent much of his life as a scholarly Buddhist monk, studying science and Western languages; his heir, Prince Chulalongkorn, and his other children were taught by an English governess, since made famous by musical comedy.⁷ King Chulalongkorn, who travelled widely in the West, planned to establish a university in Thailand, his chief aim being to train a professional civil service.

This idea was not fulfilled during his lifetime but the Royal Pages' School which he established in 1902 became the Civil Service College in 1911,⁸ and six years later the nucleus of Chulalongkorn University. Existing medical and engineering colleges were incorporated in the new university, which was given a capital grant and a large area of land near Bangkok, both for buildings and as a permanent endowment.

Though few books had been published in Thai, except those by priests and princes, the first students had a good grounding in Western languages; they studied from foreign texts and attended lectures by professors recruited from abroad. There was little translation of foreign books. Yet, thanks to its gradual development it was not necessary to establish a university wholly staffed by people of foreign tradition and for all the teaching to be in a foreign language, as happened in the neighbouring countries under colonial rule. This partial dependence on Western languages was quite compatible with efficiency as long as the number of students

⁶ Landon, K. P., *Siam in Transition* (Oxford University Press, 1959), Chaps. V, X, XI. Jumsai, M. L. Manich, *Compulsory Education in Thailand* (Paris: Unesco, 1951), pp. 1-16.

⁷ Cf. Leonowens, A. H., *The English Governess at the Siamese Court* (London: Barker, 1870), Chap. XXVI. This is hardly an authoritative document on Thai history. It has been given wide publicity in the musical comedy "The King and I", based on M. Landon's novel, *Anna and the King of Siam* (London: Harrap, 1945).

⁸ Chulalongkorn University, *Announcement* (Bangkok: 1959), pp. 4-5. Jumsai, M. L. Manich. *op. cit.*, Chap. II.

was small and their linguistic skills were well developed.

The expansion of Chulalongkorn University,⁹ from a few hundred students, at the time of the revolution of 1932, to over 6,000 in 1960 arose from the need for new faculties as the country developed and the expansion in primary and secondary school enrolments. One consequence of this expansion is that the students' knowledge of English has declined sharply.

University teachers say that these new students, from a less aristocratic class, work harder but because they know so little of any foreign language much of their effort is wasted in memorizing lecture notes or cyclostyled Thai summaries or reading, at a cruelly slow pace, a few foreign textbooks. In most subjects only a few elementary texts exist in the Thai language.

A second university, Thammasart, was founded in 1933. Its nucleus was a law school founded in the reign of Chulalongkorn. It was planned according to the continental European model of a university by some of the promoters of the 1932 revolution, who had themselves studied on the continent of Europe and felt that a system of free study was better for Thailand than Chulalongkorn's largely British system. Thammasart, also known in English as the University of Moral Sciences, includes Faculties of Law, Political Science, Public Administration, Social Work and Arts but has no natural sciences faculties, pure or applied.

The chief characteristic of Thammasart is the enormous number of students who register to take the examinations but never attend courses. Attendance at regular courses of lectures is not compulsory—a regulation making them compulsory in the Liberal Arts College has, however, just been introduced—and students are expected to study, without supervision, attending any lectures or none, as they think fit. No record of attendances is kept but inquiries are made from time to time. A recent estimate is that some 9,000 students are registered for lectures; fairly regular at-

⁹ Chulalongkorn is now a university with a fairly full range of faculties, for it includes Arts, Science, Education, Commerce, Architecture, Engineering and Political Science. Curiously enough the Medical School, which is situated very near to Chulalongkorn and actually requires certain Chulalongkorn courses in science as prerequisites, is listed as a separate university with its own system of control. See Chulalongkorn University, *Announcement*, *op. cit.*

tendance is variously estimated at 2,000 to 5,000. Since library facilities and textbooks hardly exist in Thailand, a great many students enrol, pay a trivial registration fee and chance their luck; perhaps they buy, and memorize in the evenings, a set of lecture notes taken by some other students. Many of these students receive literally no education, except such as they derive from the futile attempt to pass an examination for which they are not prepared.

Thammasart has made a great deal more use of part-time teachers from professional practice than Chulalongkorn and this gives greater flexibility in the conditions of Thailand today. Senior professional men and Chulalongkorn University staff give supplementary courses, in freer conditions, at Thammasart. Moreover, if facilities can be improved, the free study system should make possible more part-time study for professional qualifications.

While the continental European university was the inspiration of Thammasart University, Kasetsart, the agricultural university, clearly owes something to the land grant colleges of the United States. It was founded during the Japanese occupation from a group of government departmental training schools for agriculture, fisheries, cooperation and forestry.¹⁰ The new university, established at Bangkaen, some nine miles from Bangkok, had initially only about 150 students. It was given a forestry concession to provide some revenue, and was staffed by foreign-trained members of the different departments, who had already raised the standard of training for rural extension workers from primary and secondary levels. It is organized not in faculties but in six colleges: the four original schools have been expanded—the school of cooperation widened to take in economics—and two additional colleges, of veterinary science and irrigation engineering have been added. The range is thus not a narrow one though rather specialized and lacking in fundamental subjects.

Kasetsart University has received assistance both from the Council for Economic and Cultural Affairs and from United States Government's International Cooperation Administration. Its forestry concession still provides some 20 per cent of its revenue and in addition several departments have been able to pay for some

¹⁰ Kasetsart University, *Undergraduate Handbook* 1959-60, pp. 1-5. (In Thai.)

of their own needs by sale of agricultural produce resulting from their work. This has given the university more flexibility than others which have been more closely dependent on the government for their funds.

Although nominally there are five universities in Thailand all financed through different channels, the Medical University is little more than a medical faculty of Chulalongkorn, and the Fine Arts University is primarily concerned with perpetuating and developing certain forms of Thai culture, notably the famous Thai dancing, and hardly corresponds to a university in the usual sense of the word.

As a result of a report by Sir Charles Darwin¹¹ a National University Council has now been established. It will probably do little except to coordinate university policy more tightly; it remains to be seen whether it will protect the universities from government interference, or strengthen the independence of university teachers.

Cambodia

Cambodia is the most recent arrival among the South-East Asian countries with universities. Under the French, an institute of legal and political studies had been established, for the training of lawyers and civil servants; it had both French and Khmer teachers and did a little teaching in the Khmer language where the technical terms already existed. A national institute of pedagogy was next established for the urgent training of teachers; here the medium of instruction varied according to the subject, the teacher, and the type of school for which the pupil was being trained; but most teaching was still done in French. Under a cultural agreement, the Government of France established a medical school in Phnom Penh, staffed it with well qualified French professors and financed it, except for local salaries which were paid in Cambodian currency. A further training school, for higher civil servants, was also established. In the colonial period Cambodia was amalgamated with Vietnam and Laos for most purposes and the common university for the whole area was at Hanoi.

¹¹ Darwin, Charles, *Notes on Universities in Thailand* (Bangkok, mimeographed, undated).

With the loss of North Vietnam to the communists and the separation of Cambodia from the other states, the country was left, like its neighbour Laos, without a university at all.

Steps were taken to remedy the most urgent deficiencies. Too few trained Cambodians were available even to staff the training institutions. Nonetheless the Royal Khmer University was founded in Phnom Penh in 1960.

At the time of the establishment of the university in January 1960, a five-year training in law was being given, with limited facilities for students to proceed to the full doctorate. The Medical Faculty was offering a three-year course leading to the *licence* of medicine; students still had to go to France to complete their full medical qualifications. The Faculty of Arts, which was to include both a French and a Khmer section, had been established only for the propaedeutic, or intermediate year, and a French and a Khmer dean had been appointed. Intermediate work for science was being done by the Faculty of Medicine, with a Khmer dean, though the other professors were French. The teaching and general form of organization and examination were still mainly French but preparations were being made to do some teaching in Khmer, in arts and in law.

The central organization of the university had not yet been established but there appeared to be little intention of allowing much autonomy. One example quoted was that the purchase of every individual book by any professor from university funds had to be approved by the Ministry of Education, and that no member of the university could give an interview on any university question without permission from the ministry.

No outline of university education in Cambodia would be complete without reference to the Buddhist University. The tradition of Buddhist scholarship is strong in Cambodia and a Buddhist university was formally established soon after the country secured its independence. Before the secular university was established, a good deal of research on Khmer history and much of the preliminary work of creating a Khmer technical vocabulary were undertaken by Khmer scholars in the Buddhist University. Though this institution is engaged in training Buddhist priests and does no secular training, its contributions to Khmer intellectual life have been considerable.

Vietnam

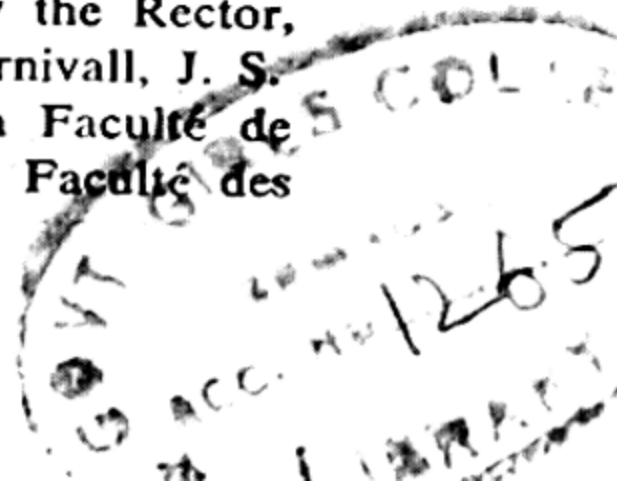
The University of Saigon is the non-communist successor to the institution in Hanoi, which began in 1917 as the Indo-Chinese University, with seven different schools, namely medicine and pharmacy, law and administration, veterinary science, pedagogy, agriculture and forestry, public works and commerce.¹² Neither arts nor science was at first included, although the title of university was adopted. A higher school of fine arts was added in 1924, but the higher school of sciences had to wait until 1941, just before the Japanese occupation. Until 1941 all these divisions were described merely as higher schools, although two of them, medicine and law, were raised to the status of faculties in 1941. The range of instruction in this university was wide and its quality high, for the French *lycées* in different parts of Indo-China taught to an advanced level; but the highest level attained was lower than in a French university.

It was only after the return of the French in the post-war period that a Franco-Vietnamese cultural agreement of 1949 established a mixed French-Vietnamese university, with three full faculties, Law, Medicine and Pharmacy, and Science, together with a higher school of architecture.

The new university's scope was narrower but it aimed at a higher level of instruction. Some of the former schools which could not teach at the appropriate level, such as the teachers' training college, ceased to be part of the university. The main university remained at Hanoi, but a limited amount of teaching was undertaken at Saigon; and after the cession of the northern part of Vietnam to the communists by the Geneva Agreement in 1954, the greater part of the university staff was transferred to Saigon. The small Catholic University of Dalat was founded at about this time but has remained too small to have much significance for Vietnam.

In 1955 the mixed French-Vietnamese university became a Vietnamese university: the higher school of pedagogy was brought

¹² "University of Saigon". Mimeographed outline issued by the Rector, Professor Nguyen Quang Trinh, 5 January, 1960, pp. 1-2. Furnivall, J. S. *op. cit.*, p. 87. "L'Enseignement Supérieur au Viet Nam: La Faculté de Pédagogie", *Journal d'Extrême-Orient*, 17 October, 1959. "La Faculté des Lettres", *ibid.*, 20 November, 1959.



in again as a full faculty; and a new Faculty of Letters introduced senior courses with a Vietnamese emphasis but retained the intermediate year in French literature. The new university was at first called the National University of Vietnam; but in 1957 it was decided to set up a national university to teach wholly in Vietnamese at Hué, the ancient capital. The title of National University of Vietnam was then transferred to this second university and the more international institution at Saigon changed its name once again becoming the University of Saigon.

Since 1954 the University of Saigon has been helped by American as well as French professors. A National Institute of Public Administration has been set up under an International Cooperation Administration contract with the Michigan State University. American professors are teaching in the Faculty of Law and in other faculties. The medium of instruction has been changed in part to Vietnamese and in part to English, with a general policy of changing increasingly to Vietnamese, but retaining some teaching on a more or less permanent basis in French and English. For example it is not apparently intended to teach English or French predominantly through the medium of Vietnamese. In the Faculty of Pedagogy, those who are training to be teachers of French or English receive a substantial proportion of their training through the medium of these languages at present, and this will probably continue. The number of faculties has not changed since 1955, remaining at five, together with a higher school of architecture.

The university's difficulties have been increased by the growth in student numbers to over 8,000—a more than fourfold increase during a period of major social and political upheaval. The transfer from Hanoi to Saigon caused a shortage of buildings, necessitating classes in many different parts of the city. The staff, however, are very well qualified, several of them *agrégés* or senior doctors of French universities. Normal teaching loads are light, not more than six hours per week and there is a tradition of high scholarship. However, inflation both of the currency and of student numbers has compelled many university teachers to take on extra hours beyond the normal load for extra payment. Despite these handicaps and the rigid civil service structure of salaries and promotions the staff manages to do some research which the uni-

versity publishes in its own regular publications in French and Vietnamese.¹³

The new University of Hué's difficulties were even greater in 1960 than those of the University of Saigon.¹⁴ Hué's ancient glories are only ruins and memories; a small provincial town near the border with the communist North offers few attractions to the French-educated intellectuals, to most of whom Saigon is the only place for intellectual and cultural life. Perhaps for that very reason this university's few permanent staff members were people of great keenness and high morale. It must be admitted, with regret, that they had little on which to build except promise for the future. Buildings were unimpressive and not even suitable, though Hué is not over-crowded like Saigon, and the university was meant as a national cultural centre in the ancient capital; equipment and even books were in very short supply; the library had seating accommodation for only about 80, with a student population that had grown in three years to over 1,400. Staff of the very highest calibre in Vietnam were persuaded to make time to travel from other parts of the country to Hué, to give lectures on a part-time basis; but this meant that courses could hardly be planned in logical sequence, but had to be adapted to the times at which the visiting professor could be available. The university was organized in four faculties—Science, Letters, Pedagogy and Law—and an institute of Chinese studies. Teaching is wholly in Vietnamese but the structure of teaching is like that of a French university. Students can read, though sometimes slowly, in French or English.

In 1960, there was only a handful of graduate students. Interesting projects and material for research had been found but conditions were still too difficult and supervision too inadequate for good results to be achieved.

Hong Kong

The University of Hong Kong is relatively small and has grown

¹³ In particular two regular series in French, *Acta Medica Vietnamica* and *Annales de la Faculté des Sciences*, and two in Vietnamese (reviews in letters, and law and economics).

¹⁴ Information based only on a visit in 1960, with no subsequent contact.

slowly by South-East Asian standards. It was founded in 1911 and was intended to serve not only Hong Kong itself but also the mainland of China. There are at present four faculties (Arts, Engineering and Architecture, Science, Medicine) as well as special studies in the Institute of Oriental Studies and courses leading to a diploma in social studies. Its international academic standing is high. Members of several of its departments publish regularly in local and in international learned journals. It conducts research on the current life of mainland China and in Oriental studies, as well as on various aspects of medicine and natural sciences.¹⁵ The total number of students was still in 1960 under 1,500 of which approximately two-thirds were in the Faculties of Arts and Science. High standards of entry have been demanded and from the beginning response from China has remained poor.

The university since the war has pressed to be allowed to expand to a figure of approximately 3,000 students and appropriate staff but has secured government approval only for a gradual increase to 1,850. The limitation is financial. Rather more than half the annually recurrent finance of the university and most of the capital expenditure is provided from government funds.

Except in the Department of Chinese, the university teaches in English, the Senate having rejected the suggestion of a government committee¹⁶ that parallel courses should be conducted in Chinese. Moreover standards of entry are sufficiently difficult to exclude most of the students from the colony's Chinese-medium schools.

Since the conquest of China by the communists in 1949, a number of American missionary societies have been providing Chinese post-secondary education, mainly for students from the

¹⁵ University of Hong Kong, *Calendar* 1959-60. University of Hong Kong, *Departmental Reports* 1953-1959. Since this article was written, a history of the university has been published to celebrate its fiftieth anniversary; see Harrison, B., ed., *University of Hong Kong, The First 50 Years* (Hong Kong University Press, 1962).

¹⁶ *Report of the Committee on Higher Education in Hong Kong*, Chairman: Mr. John Keswick, C.M.G. (Hong Kong: Government Printer, 1952), especially paras. 110-123. *Report on the University of Hong Kong* by Sir Ivor Jennings and Dr. D. W. Logan (Hong Kong: Government Printer, 1953), especially paras. 286-293.

colony's own Chinese high schools.¹⁷ Several different colleges were established. The Department of Education applied pressure on them to raise their standards, and all but three merged into one college, The United College; the other three were the Baptist College, the New Asia College and Chung Chi College. These four colleges together were more than double the size of the University of Hong Kong.

The government exercised fairly strict control over these colleges. It prevented any of them from using, in English or Chinese, the title of university, and from awarding anything which might reasonably be mistaken for a degree. Steps were, however, subsequently taken towards making grants to these colleges and later establishing a Chinese university incorporating such of them as reached satisfactory standards: a draft bill was prepared enabling such colleges to be registered as approved colleges, and to qualify for government contributions to both current and capital expenditure.¹⁸ Dr. J. S. Fulton, Vice-Chancellor of Sussex University, was invited to visit the colleges, and his report was to guide them in preparing for a later visit of a commission on the establishment of a Chinese university.¹⁹

The Fulton Report and the Bill give some indication of Hong Kong's attitude to university development. There was emphasis on long-run financial planning; qualifications for staff, academic control and logical coordination of the content and sequence of courses. In addition the Bill suggested rather more government control over teachers than would be acceptable in most universities in former British colonies. Part-time work was strongly criticized. Finally, the colleges were to restrict numbers and raise

¹⁷ Hong Kong Education Department, *Annual Report 1952-53*, p. 82 and *Annual Summary 1956-57*, p. 5. Fulton, J. S., *The Development of Post-Secondary Colleges in Hong Kong* (Hong Kong: Government Printer, 1959). Keswick Report, *op.cit.*, paras. 181-182.

¹⁸ Fulton, J. S., *op. cit.*, p. 1. Hong Kong Government Post-Secondary Colleges Bill, 1960.

¹⁹ Since 1960 considerable work has been done on the development of three of the post-secondary colleges into a university. An account of this is given in the *Report of the Fulton Commission, 1963. Commission to Advise on the Creation of a Federal-Type Chinese University in Hong Kong* (Hong Kong: S. Young, Government Printer at the Government Press, 1963). Summarized in *Minerva* I (1963), 4, pp. 493-507.

standards of entry to maintain a staff/student ratio of about one to ten or better.

These provisions hardly suggest a policy of deliberate denial of higher education to the local population, but rather one of basing required standards rather insistently on the model of British universities.

The Philippines

The Philippines stand almost at the opposite pole to Hong Kong in university design. There are profound differences in almost everything—the machinery of government regulation, the attitude to university standards and values, the impact of universities on national life. In Hong Kong there is one small, slowly expanding university, and about one university student to every 2,000 of the population; in the Philippines there are some 20 universities and about 1 per cent of the entire population are university undergraduates.

University education in the Philippines has a long history. The University of Santo Tomas was authorized to award degrees as early as 1619²⁰ and given a permanent charter by the Pope in 1645. It has functioned continuously since then, with only one complete interruption in 1898-99 and a partial interruption during the Japanese occupation.

For nearly 100 years after 1645 the university remained exclusively a place for the higher training of Catholic priests. After 1734 it also taught civil law, and did not expand much beyond this until 1871, when the medical school was opened. Only then did secular training begin to take on a more dominant role. After 1896, with the initiation of a Faculty of Philosophy and Letters, a further period of expansion began. From 1907 when it introduced engineering, it began to develop along American lines; and since the Second World War it has included a much wider range of subjects, mainly vocational, with student numbers now expanded to over 20,000. It is still, however, organized by faculties, ecclesiastical and civil, in the European style, rather than in professional colleges and carries forward into modern Philippine uni-

²⁰ University of Santo Tomas, Manila, Philippines, *General Bulletin* 1959, pp. 3-4. Furnivall, J. S., *op. cit.*, pp. 43, 92.

versity organization some of the traditions of medieval university life.

Santo Tomas still receives some assistance—mainly in staffing—from the Dominican order, but, as in nearly all Philippine universities, a high proportion of the lay staff work part-time. It cannot afford adequate full-time salaries, since nearly all its finance is derived from fees. Nevertheless it does a fair amount of graduate work, especially in the medical school.

Santo Tomas is the university of tradition, but it is on the University of the Philippines that the government's main academic effort has been concentrated.²¹ This university was founded in 1908, with a generous grant of land for endowment. Government grants meet nearly half its expenses. Its Board of Regents includes *ex officio* the Secretary for Education of the Philippines and members of educational committees of both the Senate and the House of Representatives; it can appoint nearly all its professors full-time and so concern itself with a higher level of graduate work.

Nevertheless even in the University of the Philippines the majority of the research that is being done—apart from theses for masters' degrees—is undertaken not by ordinary teaching members of the staff but in special institutes established by the university: agricultural research at Los Baños, research on administration at the Institute of Public Administration in Manila, economic investigations at the Institute of Economic Development, for all of which special funds are provided, partly by the government and partly by international foundations.

The university is organized, like most Philippine universities, in professional colleges of which there are over 20, together with some affiliated colleges away from Manila. The total number of students had risen from about 5,000 before the war to over 13,000 by 1960. Rather more than 5 per cent of the students are post-graduate. Among the undergraduates a good many are preparing for careers like nursing and journalism which have little relation to research.

The University of the Philippines, of course, was not originally designed to be the apex of a general university system or to play the role of raising standards in an existing structure of professional

²¹ Cf. Sinco, V. G., *Education in Philippine Society* (Quezon City: University of the Philippines Publications Office, 1959).

life. It was intended to be a good general university, modelled in part on the best land grant colleges of the United States. It has done its work well and has helped to establish a Filipino professional class; but academic values were debased in the process; and a class of academic entrepreneurs arose which turned the tremendous educational ambition of the Filipinos into a source of profit.

Commercial employers first recruited members of the new professional class on a part-time basis to give classes in the evenings; later, commercial universities were established, giving training, of some practical use but little academic significance, and run for the benefit of private share-holders.

The other universities in the Philippines may be divided into those run by religious orders and other missionary bodies²²; and those which have worked up to university status from either secondary schools or business schools.²³ According to Philippine government regulations, a university must have at least four approved professional schools and a graduate school.

Some of the missionary universities have been able to be fairly selective both in admissions and in the subjects offered. The monastic orders have highly qualified and devoted staff, who cost only their keep, while other missionary bodies can pay such staff a salary well below market values; this enables them to reduce the proportion of merely technical courses and of part-time teachers.

Two missionary universities that have achieved a high reputation are the Jesuit Ateneo de Manila and the Protestant Silliman

²² Ateneo de Manila, Quezon City, Philippines, *Aegis* 1959, Centenary Number, Pt. I, Sec. 1. Colleges of Arts and Sciences, *Announcement of Courses* 1959. Silliman University, Dumaguete City, Philippines, *A Survey of Silliman University*, Chairman: Dr. W. H. Fenn (1955) and *Bulletin of General Information* 1960-61. University of San Carlos, Cebu City, Philippines, *Catalogue* 1959-60 and the official publication of the students of the University of San Carlos, *Carolinian 25 Jubilee Graduation*, 1960, XXIII, 4.

²³ Cf. Far Eastern University, Manila, Philippines, *Bulletins of Information* (General, and Institute of Accounts, Arts and Science, Education, Law, Medicine, and Technology) 1958-59; University of the East, Manila, Philippines, *Bulletin* 1959-60; University of the East, *Founder, Tenth Anniversary Number* 1957; and bulletins from Araneta University, Rizal, Centro Escolar University, Lyceum of the Philippines, Philippine Women's University.

University in Dumaguete City, financed from the United States by the United Board for Christian Higher Education in Asia. These are both comparatively small universities, by Philippine standards, with student populations of about 1,500 each. Both have a strong orientation toward religion and character-building. Intellectual standards are subsidiary, in their scheme of education, to religious aims.

The Ateneo is selective and seeks to train an elite. Its fees are fairly high by Philippine standards and about half its staff are unpaid members of the order. Their main aim is to produce catholic leaders and this reduces the pressure to take large numbers of students and to offer courses of immediate economic significance. Its constituent colleges are mainly academic—arts and science, law, a graduate school of economics and a graduate school of arts and education. Its record of research and publication, mainly by the members of the order, is considerable for so small an institution.

Silliman University is less academic in its orientation, with a rather less highly selective enrolment system. Its constituent colleges include engineering and nursing as well as arts and science, theology and law. It attracts students from outside the Philippines and aims at a sound moral and vocational training. Research is not highly regarded in selection for promotion and university funds are provided for research only if it is considered necessary for teaching; nevertheless some useful research has been undertaken with funds from foundations and elsewhere.

The other universities run by missions are generally larger, with the subsidized missionary element more heavily diluted by local part-time staff. The Protestant University of the Central Philippines at Ilo Ilo enjoys a good reputation in the country as a teaching institution. San Carlos University in Cebu, run by the Society of the Divine Word, has five times as many students as the Ateneo, with less selection for entry, and a fairly high proportion of teaching for courses not leading to any advanced qualifications. It has, however, developed, both by selection and salary procedures and by personal example of the members of the order, a tradition of field work and original research among its lay staff.

Of the private universities not run by missionary bodies two, the University of the East and Far Eastern University, are out-

standing in size and rate of growth. Leaving out of account their high-school students, Far Eastern University has about 35,000 students and University of the East 30,000. Far Eastern University began as a privately owned night school teaching commercial subjects; it acquired university status in 1934 and had already about 5,000 students when the war began. The University of the East began in 1946.

There can be no doubt that a great deal of training of real value to the economy of the Philippines is given in these and similar proprietary universities. Both universities offer a limited amount of graduate work, with teaching of respectable quality, but the proportion of graduate courses and students in the whole university is so small that their impact must be negligible. Much of the undergraduate work could have been done without subsidy in institutions not claiming the title of university; but from a commercial point of view the more advanced and expensive courses and these low-grade ones are complementary; the prestige of a medical school attracts students into secretarial and accountancy courses, which help to pay for the buildings and equipment.

The disadvantages of the present system are, of course, obvious. Students tend to become mere technicians, with too little knowledge of how to think; nearly all the staff are employed part-time and paid by the hour; payment sometimes varies with the number of students and always depends on there being enough students for a class; students are given a good deal of choice between classes within one degree and this, together with general control by persons who are financially interested in the number of students, may be expected to discourage the lecturers from requiring very exacting standards or failing too high a proportion in examinations. Most of the degree candidates subsequently sit for government professional examinations before being allowed to practise; but the average quality of the candidates is bound to influence even these examinations.

The impression should not be created that the two largest private universities show more of the harmful features of this system than the others. Because of their size, they can afford to attract a few outstanding names each, usually on a part-time basis, and pay them an adequate salary. Probably the attraction that such names exert over students exceeds their real value, but undoubt-

edly they can exercise a beneficial influence, not only directly but by stimulus and example to their colleagues.

Some smaller private commercial universities have achieved notable specializations. Arañeta has earned a high reputation in agricultural research. It has employed retired government Agricultural Department specialists to gain some advantage from their experience; it has economized on buildings and in its rural setting, so releasing funds for research; and it has produced on a commercial scale certain by-products of its research—feed, seeds, etc.—for the farming community.

The Philippine Women's University has attracted worldwide fame for its fostering of Filipino dances through the world tour of a group of its student dancers, the Bayanihan.

These examples indicate some of the vitality that comes forward from time to time in the private university system of the Philippines. The system as a whole provides some post-secondary education to nearly a quarter of a million young men and women of the Philippines—more than the total number of university students in the rest of South-East Asia. The cost to the Philippine government is negligible. This enables it to spend some 3 per cent of the whole national income on education at lower levels.

Of all the systems in the region, that of the Philippines has shown the greatest adaptation to the South-East Asian situation. It certainly has weaknesses. But the Philippine Republic is an innovator that may make false starts, not an imitator of traditional and foreign ways in a radically different environment.

*Indonesia*²⁴

Comparing the universities of Indonesia with those of the Philippines, one is struck by a greater symbolism of revolution and less actual innovation.

Just before the war the Dutch had worked out plans for a university, based on existing institutions of higher learning and research—medical schools at Djakarta and Surabaya, the botanic

²⁴ There has been more development of universities in Indonesia since 1960 than elsewhere in South-East Asia, and also more change in their organization. It is, however, virtually impossible to obtain reliable information without visiting the area, and no attempt has been made to record recent changes.

gardens at Bogor for a Faculty of Agriculture, the technical college at Bandung, and a new Faculty of Arts to be established at Djakarta. Those plans were frustrated by the Japanese invasion.

After the war the Dutch established a university with branches in Djakarta, Bandung, Bogor, Surabaya and Makassar, while the republican government organized schools of higher learning in Djakarta itself and academies for training government servants in Djogjakarta.

We must not minimize the great transformation brought about in the Indonesian educational system by the ending of colonial rule. Before the war, one small national university existed virtually only on paper; by 1960 there were seven much larger universities and an institute of technology. The language of instruction has been completely changed. In some instances the change has been from a local language to Indonesian, in some from Dutch to English, but mainly Dutch to Indonesian and it has affected the whole system from primary school to university. The Indonesian national language has been expanded and is generally used for technical purposes. English, the new second language, is now quite well known among administrators and executives. In addition 28 government academies have been established to give training at about pass degree level to civil servants; and private universities, out-numbering the state universities, have been given varying degrees of government assistance.²⁵

²⁵ Documents giving even the basic facts about these developments are scanty. It is difficult for foreigners to gain access to Indonesia for long periods or to travel within the country. Those who can are mainly associated with continuing projects within Indonesia and need government goodwill, which makes it difficult for them to write frankly; for the difference between the official myth and reality is much wider in Indonesia than in any other South-East Asian country. Because of this, and because most of my information is based on interviews in Djakarta and Djogjakarta with scholars and administrators whose names—because of my critical comments—I prefer not to give, this section is much the most sketchy in this article, in comparison with the scope of the subject. For the Dutch period cf. Furnivall, J. S., *op. cit.*, pp. 79-80, Djadjadiningat, Raden L., *From Illiteracy to University* (New York: Institute of Pacific Relations, 1948), pp. 46-51; Angelino, A. De Kat, *Colonial Policy* (The Hague: Nijhoff, 1931), Vol. I, pp. 379-382, 391-397, Vol. II, pp. 250-251; Vlekke, G. H. M., *Nusantara: A History of Indonesia* (The Hague: Van Hoeve, 1959). For the period since independence cf. Smith, Bruce L., *Indonesian-*

One feels a lack of innovation because, with all this expansion, curricula, forms of organization, and methods of teaching still largely follow the former Dutch pattern, except in departments directly under American influence with American staff.

At the end of the revolution in 1950, the different academies at Djogjakarta were amalgamated to form a new national university, the University of Gadjah Mada.²⁶ At the same time the Indonesian and Dutch faculties in Djakarta, together with the branches in other cities, were incorporated in the University of Indonesia.

The branches at Djakarta, Bandung, Surabaya and Makassar were expanded through the addition of new faculties to form four state universities, the University of Indonesia, Padjadjaran, Airlangga and Hasanuddin respectively; Bogor remained a faculty of the University of Indonesia. Two further universities were founded in Sumatra, the University of North Sumatra at Medan and the University of Andalas. The latter began at Bukit Tinggi and later moved to Padang.

Most of these universities were built up round a nucleus of one or two strong faculties. Professors from elsewhere (mainly from the two national universities) were sent by air regularly to give courses in additional faculties until someone could be spared to take up a regular appointment. The new organizations were essentially similar in form, though not in range of subjects offered, to the national universities. An exception was the Institute of Technology at Bandung; this had existed before the war as a technical college and was expanded on an American model with assistance from the University of Kentucky, instead of being incorporated

American Cooperation in Higher Education (East Lansing: Michigan State University Press, 1960), Chap. II; Allen, Raymond B., *et al.*, *Higher Education in Indonesia* (Djakarta: Division of Education, U.S.O.M. Indonesia, International Co-operation Administration, 1959), pp. 2-5, 16-21; Poesponegoro, S. D., *The Development of Higher Education in Indonesia* (Djakarta: mimeographed, University of Indonesia, 1959), Hutasoit, M., *Memorandum Concerning the Ministry of Education* (Djakarta: Ministry of Education, 1959), Chap. VI.

²⁶ Afandi, A., *Some Information about Gadjah Mada University* (Djogjakarta: Gadjah Mada University, undated); Gadjah Mada University, *Orders and Regulations relating to Gadjah Mada University*, 1950, 1955, 1958, mimeographed, in Indonesian.

as a faculty of the University of Padjadjaran in the same city.

Though the formal structure is similar, with a senate, separate faculties each with its own dean and separate departments each with its own professor or other head, the way it works differs from place to place. For example, there are differences in the degree of control by deans and professors and also in faculty structure; though medicine, economics, letters, science and law are fairly general in the state universities.

Innovations, apart from the important change of language from Dutch to Indonesian, derive from two major sources: the affiliation programme with American universities and the private university movement, caused mainly by regionalism and the very rapid expansion of the secondary schools.

After much initial mistrust, Indonesia accepted aid to its universities from the Ford Foundation and from the United States International Cooperation Administration. This took the form of contracts with particular American universities, affiliating one or more departments in an Indonesian university to corresponding departments in an American university.²⁷ The first three were initiated in 1954. In that year Cornell University received a Ford Foundation grant to help develop the Institute for Social and Economic Research in the University of Indonesia at Djakarta and the Northern Division of the University of California received two similar contracts to help the economics and medical faculties of the same university. The University of Kentucky's I.C.A. contract, which led to the further development of the Bandung Institute of Technology, followed in 1956.

The next year brought four new affiliation contracts. Two were for Gadjah Mada under the International Cooperation Administration (for engineering with the University of California, Los Angeles, and for economics with the University of Wisconsin). A third under the Ford Foundation affiliated the University of Indonesia's Faculty of Agriculture at Bogor to the University of Kentucky. Finally Johns Hopkins School of Advanced International Studies and Gadjah Mada financed between themselves an affiliation for studies in international relations and general political science. In 1958 a further Ford Foundation contract with New York State University enabled a group of American profes-

²⁷ Smith, Bruce, L., *op. cit.*, Appendix.

sors to assist the teachers' training faculties established in several Indonesian cities. The following year the Ford Foundation contract with the University of California Medical School in San Francisco was extended for work with Airlangga University.

This massive impact of American professors on four universities and on teachers' training faculties has modified slightly the university teaching system. American professors found that the Dutch free-study system was not yielding good results because technical books were not available in the Indonesian language; and they were able to introduce a new system using assigned readings, sometimes compulsory attendance at classes and written examinations. The Indonesians obligingly called this 'guided study,' to match the president's 'guided democracy.' The change was made possible by generous American supplies of textbooks and by the surprising success of Indonesian students in improving their knowledge of English.

The reaction of Indonesian university administrators has not been to abandon the Dutch structure of organization for the American. They have begun to speak of a characteristically Indonesian system, intermediate between the Dutch and the Anglo-Saxon, with lower staff-student ratios than are needed for the latter but without the range of reading matter in Indonesian that would be needed for the former; but not much has been actually done to face the facts of life. New methods might be possible which would be adapted to these scarcities, but they have not been devised; and Indonesians still claim—at least publicly—that their standards are higher than those of America.

The remarkable success of the Indonesian government in expanding the secondary school system and its failure to increase university places correspondingly led to a growth, from about 1953 onward, of private universities. The origin of some of these was religious, of some political. The shortage of potential teachers and the greater poverty of the country made it impossible for private commercial universities to flourish as in the Philippines, but part-time teachers were used to teach part-time students in the evenings. Control of standards was not very effective, at least not in 1960.

Both Muslim and Christian universities have been established, sustained in part by the contribution of the faithful in Indonesia

and abroad. Political universities, some of them also Islamic, derived contributions from political supporters. Few of these were regarded locally as having achieved a reasonable academic standard.²⁸

The government has established a Bureau for the Co-ordination of Higher Education, which maintains a register of private universities and their faculties. It is supposed to prevent the use of the term 'university' by any institution with less than three faculties, though several in fact appear on the register with less than three. It was also supposed to ensure adequate full-time and part-time staff for the subjects taught and supervise entrance requirements, library facilities and equipment. Government grants to cover part of the expenses—sometimes as much as 60 per cent—could be made in appropriate circumstances. But in the chaotic financial conditions of Indonesia financial control counted for little and the office had little other power since the law dealing with private universities, which existed in draft for some time, was approved by parliament only in 1961.²⁹

Malaysia

The University of Malaya was until recently a federal structure with one division each in Malaya and Singapore, each serving both countries for particular purposes.³⁰

The University of Malaya in Singapore was a post-war creation, resulting from the amalgamation in 1949 of the former King Ed-

²⁸ An exception is Nomensen University, a protestant university in Central Sumatra, which enjoys an excellent reputation and has attracted aid from one of the international foundations.

²⁹ The delay was due to the current political situation and probably did not indicate any serious opposition to the introduction of such a measure.

³⁰ Cf. *Commission of Enquiry on the University of Malaya, Report*. Chairman: Dr R. S. Aitken (Singapore: Legislative Assembly, 1957); *Joint Committee on the Constitution of the University of Malaya, Report* (Kuala Lumpur: Government Printer, 1958); *Joint Committee on Finance of the University of Malaya, Report* (Kuala Lumpur: Government Printer, 1958); *University of Malaya (Amendment) Ordinance* (Federation of Malaya and Singapore, 1958); *University of Malaya, Annual Report 1957-1958*, pp. 8-9. The university divisions were made separate universities in 1962, the Singapore division becoming the University of Singapore, the Kuala Lumpur division the University of Malaya.

ward VII College of Medicine with Raffles College, a college of arts and sciences.³¹

It was founded as the result of the recommendations of the Carr-Saunders Commission, which recommended immediate university status, instead of a transitional period of special relationship with the University of London, as envisaged in the reports of both the pre-war McLean Commission and the post-war Asquith Commission.³² This recommendation was popular with the staff of Raffles College, its graduates and its students, but was received with alarm by most of the European staff of the Medical College. The basis of the opposition was partly political; but probably a more important reason was the fear that medical standards would be undermined in a wider university.

The Carr-Saunders Report recommended a general programme of expansion, much of which, if it could have been carried out, would have strengthened the university's local standing. Perhaps the most important of the new developments were new departments in the three major local languages; but the difficulties of establishing them, within the post-war framework of universities set up by the Asquith Commission, proved much greater than had been anticipated.

To begin with, the filling of the chairs raised serious difficulties and offence was given to both the Chinese and Malay communities: the regular procedure of recruitment by advertisement and selection did not attract the most promising Chinese candidates; and suitable Malay candidates were not forthcoming. Appointment of senior lecturers to head both these departments proved a serious political liability. Indian studies caused acute controversy between leaders of the local Tamil community and supporters of Hindi as the Indian national language, and this also led to delay.

But equally serious difficulties were to arise after the depart-

³¹ *Commission on Higher Education in Malaya*. Chairman: Sir William McLean. (Singapore: Government Printer, 1939); *Commission on University Education in Malaya*. Chairman: Sir A. M. Carr-Saunders. (Kuala Lumpur: Government Printer, 1948); *University of Malaya Ordinance* (Kuala Lumpur and Singapore, 1949).

³² *Report of the Commission on Higher Education in the Colonies*. Chairman: Hon. Mr Justice Asquith. Cmd. 6647 (London: H. M. Stationery Office, 1945).

ments had been established. In any language department in a multilingual community, the forces of academic ambition within the international university system tend to promote a standard attainable only by those who speak the language as a mother tongue. No one who heads a department of Malay, Chinese, Tamil, or for that matter English, in a university in Malaya will readily accept a standard that might be acceptable in any of these languages in, say, France. This would involve making the subject a despised 'soft option' to any who had been wholly brought up in the language. Yet unless this is done the department becomes accessible to only one race, and its activities become a political liability in terms of developing a national consciousness by interchange of language knowledge.

In practice, under pressure from the rest of the faculty, all these departments introduced some compromise courses at an elementary level for students not speaking the language as a mother tongue. But this was done only temporarily and without enthusiasm; the standard, in the main work of each department, remained exclusive and each department tended to become a focus of one racial community.

Other recommended expansions which might have improved the university's local contacts also ran into difficulties, mainly from existing departments. In particular adult education, in which there was considerable local interest, was never developed as a department, for fear of the effect on the university's standards.

New Faculties of Law, Engineering and Agriculture, however, were successfully developed; pharmacy was expanded from a diploma to a degree within the medical faculty, and education made an independent school. The number of students also expanded much more rapidly than had been foreseen. The Carr-Saunders Commission had expected an increase from just under 600 to 1,000 in 10 years. This estimate seriously misjudged the educational climate of South-East Asia. By 1959 the numbers had reached nearly 2,000; but this came nowhere near meeting the demand, and showed a slow rate of advance in comparison with other South-East Asian countries.⁸³

In some respects the achievement of university status improved the quality of academic life: staff/student ratios improved, and

⁸³ University of Malaya, *Annual Report*, 1958-59.

the rapid rate of expansion made it possible to base courses on local material; graduate work began to be developed; academic visits became more frequent.

But closer links with the international academic community did not prove wholly beneficial. The pressure to assimilate the form and standard of at least the honours degree to an overseas pattern rapidly grew stronger. Parity of standards became an important issue in salary negotiations and hence in politics.

Even more important was the increased mobility of students and staff. Students wanted immediate acceptance as graduates abroad; staff had to be attracted and had to be free to move and this generated pressure in favour of uniformity of conditions. Those who had taught in the former colleges found that although they now formally had more freedom, and though they could in fact adapt the content of courses to local conditions, the system of external assessors and of the Inter-University Council in London imposed greater restraints on the form and standard of courses than had prevailed before.

The effect of university status on the output of research was generally beneficial but there were two contradictory pressures. On the one hand the improved staff/student ratios, the chance to use local material in teaching, and the general improvement in morale, stimulated a considerable expansion in relevant research activity. At least five departments started their own local journals; several began to foster professional groups and engage in similar extension activities outside the university; several departments began to require some original research for the honours degree and take an interest in organizing it.

On the other hand, the increased academic contacts with other universities strongly inhibited this kind of activity. It soon became apparent that other universities took little interest in such work. Senior members of the staff would serve on selection boards and read disparaging comments by overseas assessors on such work done by their junior colleagues. The juniors themselves soon discovered that attention to a local research tradition earned no credit. The young men who gained advancement were those whose eyes were firmly fixed on the impression they were making in the journals received, not in Malaya but in Oxford or Harvard or London.

It speaks well for the enthusiasm of Malayan students—forcefully praised by the Carr-Saunders Commission—and for the standards of the former colleges, that a substantial, if diminishing, proportion of the staff of the university, against their own professional interest, continued to put the academic growth of Malaya first.

Student life was affected for some years by the effects of the communist 'emergency' in the Federation of Malaya. Communist cells were naturally attempting to infiltrate and make use of many student activities. It was possible at first for the authorities to deal with this by ordinary methods of persuasion, serious discussion of student grievances and promotion of more responsible student activities. Some of the activities of the members of communist cells, however, attracted the attention of the police and a few students were arrested and detained under the emergency regulations. These students had, of course, concealed their communist affiliations and been active in many student societies; and their arrest created widespread fear of police hostility to all forms of student activity.³⁴ It was only gradually that student political and social life recovered from this shock. But students of the University of Malaya have taken a leading part in promoting a less communal, more Malayan, attitude.

From the beginning the University of Malaya experienced the difficulties of any university sponsored by a colonial power in a plural society. It was criticized continually by the Malays, who had vigorously opposed its foundation, on the ground that a majority of its students were Chinese. Because the Malay States, to counteract this preponderance, gave most of their scholarships to people of Malay race, it was subjected to a flood of international propaganda by the Chinese that it was engaging in racial discrimination.³⁵ In fact the preponderance of the Chinese in the university was due to a great preponderance of Chinese in the secondary schools, most of which were urban and mission-sponsored,

³⁴ Cf. also Silcock, T. H., *Towards a Malayan Nation* (Singapore: Eastern Universities Press, 1961), p. 52.

³⁵ I have not attempted to trace the sources of all this propaganda, the results of which are encountered everywhere if one mentions that one works in the University of Malaya. One careful American scholar who has been misled by it is F. H. H. King, cf. *The New Malayan Nation* (New York: Institute of Pacific Relations, 1957), pp. 26, 46.

and hence less accessible to the predominantly rural and Muslim Malays; while because of the policy of conducting secondary education in English, there were no Malay secondary schools.

The Chinese, however, had established secondary schools at their own expense in both Malaya and Singapore. When in 1949 the Chinese universities ceased to be available to those who did not wish to return permanently to China, pressure was exerted on the university to admit students from these Chinese schools. This was clearly difficult in view of Malay attitudes to the existing preponderance of Chinese in the university and though some concessions in entry requirements were made, the Chinese community in Singapore grew so hostile that eventually the decision was taken to establish a wholly Chinese university in Singapore.

Large fortunes earned by Chinese rubber dealers during the Korean War boom provided the means; land was acquired, buildings erected, and in 1956 students were enrolled. The Colonial Government of Singapore refused to grant a university charter except in accordance with usual Commonwealth practice—i.e., after investigation of facilities by a commission, and preferably after a period of experience at a level lower than that of a university. To counteract this, the institution was floated as a limited company, Nanyang University Limited. This produced some undesirable features in its constitution.

By 1959 Nanyang University had 1,700 students in three faculties, Arts, Science and Commerce. The Government of the Federation of Malaya has completely refused to give any attention to Nanyang University, the foundation of which was regarded as an attempt to provide for Malayan Chinese an orientation away from Malaya in flat contradiction to official government policy. The elected Government of Singapore was, however, by 1959, under strong pressure to do something for the university. It passed a hurriedly prepared Nanyang University Ordinance, which has since been sharply criticized in the reports of two commissions.³⁶ It also made a grant to the university. Frequent attempts have since been made to change the character of this university. No doubt the

³⁶ *Nanyang University Commission Report*. Chairman: Mr S. L. Prescott. (Singapore: Legislative Assembly, 1959); *Nanyang University Review Committee Report*. Chairman: Dr Gwee Ah Leng. (Singapore: Legislative Assembly, 1960.)

government wishes for more control, as university representatives allege, but there have also been efforts to increase the influence of the academic staff in the internal government of the university. These have also been resisted.

Meanwhile, in January 1959, the University of Malaya was formally divided into two divisions, one in Singapore and one in Kuala Lumpur, with a common Vice-Chancellor, Central Council, Court and Guild of Graduates, but with substantial independence of the two divisions; the Singapore division had Faculties of Arts, Science, Medicine, and Law, and a school of education; the Kuala Lumpur division had Faculties of Arts, Science, Engineering, and Agriculture.³⁷

By contrasting Nanyang University, as an independent local foundation, with the officially-sponsored University of Malaya, one could draw conclusions superficially very favourable to the British colonial record. In the University of Malaya precautions were taken, along lines laid down in the Asquith Report³⁸ to secure academic control of academic policy, and independent, though not wholly academic, control of financial policy. At the same time the constitution ensured that appointments would be made on the advice of recognized academic experts. In Nanyang University the controlling power rested with a limited company: in effect, its chairman and secretary, who had no academic training or experience. Staff were selected with no formal procedure and no security of tenure and allegations of favouritism have been recorded by an investigating commission.

But this contrast overstates the case. The University of Malaya's financial structure has outlived the colonial government, but not without severe conflict; a more limited financial autonomy might have made the constitution more acceptable to the elected governments and, hence, in the long run, more defensible. The selection procedures have proved a source of strength in general but have led to delays and embarrassing inconsistencies. Moreover some of the worst features in the Nanyang University constitution arise

³⁷ With the separation of the two divisions into different universities, steps have been taken to widen the range of faculties in each, to include, for example, medicine in Kuala Lumpur and engineering in Singapore.

³⁸ Cf. Carr-Saunders Report, *op. cit.*, pp. 70-71, 119, 128-29. Asquith Report, *op. cit.*, Chap. VIII.

from the colonial government's vacillation. It failed either to prohibit altogether a university that ran counter to the policy of the federation government or to impose the safeguards of academic viability that recognition would imply.

Possibly the colonial government, following the Asquith Report, showed some sense of academic values that need safeguarding. But it showed in both cases too little adaptability to the special needs and pressures of the region.

Conclusion

Essentially the task of a university, in South-East Asia, no less than anywhere else, is to promote the values and skills of learning among the people of the region and to maintain contact with the learning of mankind both of the present and past, at home and in other places. The life of learning is always under some pressure and it is one of the tasks of the academic world to find, in each situation, the method that will best preserve and foster what is essential.

In South-East Asia most of the universities have been established by foreigners or have copied foreign models. It is far from clear whether the forms they have taken over are those best calculated to promote learning in the new environment. Neither the formal independence of the university from political or commercial control nor the level of the entrance examination and the first degree is an end in itself. Both are means to the promotion of a set of values and skills. The education that must be undertaken includes the education of those in authority and it must normally start from existing motives. If the fight for academic autonomy makes the university dependent on student union leaders, as in Burma, it is probably bought at too high a price. If universities are run for profit on a part-time basis as in the Philippines, it is perhaps wiser to build up professional standards of field work, access to journals, freedom from pressure in examinations, etc., within this framework than to deplore it as not being genuine university work. If the challenge of creating a national university in the ancient capital at Hué creates good morale and a challenge to academic development, it may be sounder to found professions on what this university can produce and on cultivating a professional sense that very much needs to be learnt, rather than to spend time

and effort questioning the adequacy of literature in Vietnamese.

In a small country failure of standards to conform to an internationally recognized pattern is inconvenient. It requires checks to be made on staff or students when they move from one country to another. Yet it is not axiomatic that these countries should adapt their academic systems to save universities elsewhere from trouble in accommodating their students or furthering the careers of their staff. Whether the universities in the better-endowed countries are prepared to take this trouble will largely depend on whether the republic of learning is, in effect, more international in its attitudes than the states of the modern world. Enormous differences in income and great obstacles to the movement of people and resources make it inevitable that the ways of fostering learning most effectively, will differ from state to state. We can only press for uniformity of standards and institutions at the cost of reduced effectiveness in many of the countries where the values and skills of science and scholarship have much to contribute.

ESTABLISHING A NEW UNIVERSITY IN AFRICA

KENNETH MELLANBY

It is now just over 15 years since I went, in 1947, to Nigeria to try to establish a new university. Today University College, Ibadan, has some 1,625 undergraduates and an academic staff of 264, and elsewhere in Nigeria four other universities have been started. The present situation makes it difficult to visualize the position in 1947, when many people, particularly those with long practical experience of West Africa, doubted whether it was wise, or even possible, to think of having even one Nigerian university; some doubted whether the whole of West Africa could support such an institution.

Those planning new universities in Britain today find plenty to occupy their time and energy, and I have no doubt that academic life everywhere will gain from their experiences, and from the results of their experiments. However, these new universities are a natural development of the educational system in Britain. In Nigeria, particularly in the Nigeria of 1947, conditions were very different. Only a tiny minority of the population was literate. The majority spoke—and thought—in languages which had never been reduced to a script. The mass of the population knew little of the background of Western culture, and we knew little of their background. How was a university relevant in this situation, and what kind of university was desirable?

Had we been planning a university fifty years earlier these differences in background would have appeared less important. We would have assumed that our object was to overthrow ignorance and to liberate the Africans from backwardness. We would have had no doubt that we were bringing our superior wisdom to do away with their ignorance. This view still had considerable currency in 1947.

However, some of us had progressed a little, and were no longer convinced that everything European was 'good' and everything African 'bad'. We recognized that there was some value in African culture, and paid lip service to the idea that we wanted to create an African university and did not simply want to import an alien institution. At the least, we wanted to be sure that what we created was adapted to the needs of Africa. This attitude affected our thought a lot, and made it more difficult to take decisions; I am not sure whether it had much effect on what we actually did.

As soon as I reached Nigeria I realized that we were faced with an urgent problem. We had very little time if we were going to make any contribution to the needs of Nigeria for trained men and women who could play a part in the country's development. In 1947 complete self-government as a practical proposition, and not simply as an ideal to be sought in the distant future, seemed a long way off. Chief Awolowo, one of the most vocal and advanced nationalists, had just produced his book, *The Path to Nigerian Freedom*,¹ which, while advocating complete independence as an eventual goal, proposed for the present little more than a broadening of the base of the existing colonial constitution. Nevertheless, there was intense feeling that more Nigerians should be given the opportunity to qualify for 'senior service' posts, which meant that they must be able to obtain degrees of a standard equal to those obtained in Britain. There was little political pressure for any integration of the university with anything specifically African; in fact, there was considerable suspicion lest we might be fobbing off Nigeria with a second-rate university which made any radical experiments very difficult to conduct. Any criticism of the Western character of the university was slight in comparison with the outcry when Nigerians suspected that Ibadan would not give its students all the advantages they would have received in England. The urgency of the situation gave little chance for thought or for long-term planning.

Our first immediate task was to house the university. To some this may seem a comparatively unimportant problem. They stress, rightly, that the best buildings are useless without good staff and promising students. But the question is not really so simple. Even

¹ Awolowo, O., *The Path to Nigerian Freedom* (London: Faber, 1947).

in a warm tropical climate you cannot study science under a tree! Also the buildings of a college are what the public sees, and they help to create its public image. When we were, in fact, able to put up good buildings they did have a great effect on our students, on the people of Nigeria and on academic visitors from overseas. The main trouble about planning new buildings for a non-existent university was that we had to turn very tentative plans literally into concrete before we could accurately assess our requirements. Early decisions on the kind of university we were trying to build had, therefore, a very considerable influence on what was in fact created.

I have described elsewhere² how we started work in wooden huts adapted from a derelict army hospital. I am sure that this was the right way in which to start, for these buildings were cheap and easily adapted to any purpose. By admitting over 200 students in the first year of our existence we obtained immediate practical experience which made the planning of our future buildings possible. Many of our staff and of our advisers would have preferred to have had a longer period in which to plan the future, but the need to go ahead immediately was a valuable stimulus.

The British government provided, at the outset, £2,000,000 towards the capital cost of the college buildings. Mr Maxwell Fry and Miss Jane Drew were selected as architects, and were briefed as accurately as was then possible. We all had to make a great many unwarranted assumptions. We started off trying to implement the recommendations implicit in the 'Asquith'³ and 'Elliot'⁴ reports. These were that we should have a residential university, housing all students in halls of residence which would resemble halls in English provincial universities with, perhaps, some of the qualities of Oxford and Cambridge colleges (qualities some provincial universities were also trying to import). We would have faculties of Arts, Science, Medicine and Agriculture.

The idea of a *residential* university has been questioned, parti-

² Mellanby, K., *The Birth of Nigeria's University* (London: Methuen, 1958).

³ *Report on the Commission on Higher Education in the Colonies* (London: H. M. Stationery Office, 1945).

⁴ *Report of the Commission on Higher Education in West Africa* (London: H. M. Stationery Office, 1945).

cularly by some Nigerians, but I have little doubt that this was a correct decision. The 'Ashby' Commission,⁵ in 1960, recommended that the new universities should be at least mainly residential, after examining the situation at Ibadan and elsewhere. I always found a great demand for residence from students, including medical students in Lagos, where the possibility of finding adequate lodgings was greater than anywhere else in Nigeria. Even a married student, with his home in Ibadan, was prepared to make considerable financial sacrifices to live in hall, as otherwise he had no access in the evenings to the libraries, could not take part in college activities, and he found study difficult in the type of home occupied even by an African middle-class family. The Nigerian undergraduate did not seem to wish to be a 'nine to five' student, a type not uncommon in London or provincial universities in Britain.

Residence for students was necessary, but did we tackle the problem in the best way? We did indeed base our halls very much on the post-war English pattern. Each student had a separate study-bedroom, with communal meals. This was expensive to build, and some people have suggested we could have adopted a cheaper solution. Attempts have been made at Ibadan to do this, but nothing revolutionary has been achieved. In other places 'African villages' and multi-bed dormitories have been tried, but the result has not been particularly successful. I think our architects produced halls which, though in fact cheaper than most others in the tropics or in Britain, made a substantial contribution to the appearance, efficiency and dignity of the college. Though alien importations, they filled a local need.

We had also to produce classrooms, laboratories and a university library. It appeared to me at the outset that however our courses developed none could go ahead properly without a first-class library, far more necessary in Nigeria than in England, where students have access to good public libraries and other collections of books. When funds were short, so that we could not meet all our building needs, I decided that we should make few economies in the library and halls, and that we should try to build cheap,

⁵ *Investment in Education: The Report of the Commission on Post-School Certificate and Higher Education in Nigeria* (Lagos: Federal Government Printer, 1960).

adaptable and semi-permanent laboratories which could be adapted as our position became clearer. This seemed a sensible solution in Africa, for even in developed countries most scientists find it difficult accurately to foretell their requirements for many years ahead. We certainly tried to prevent our buildings from being designed so as to act as a strait-jacket which would restrict our successors when they wished to modify their courses.

Today the Ibadan college buildings have proved themselves reasonably fit for their purpose and able to allow some degree of flexibility to the users. They have been widely admired by architects. They do not perhaps create quite the feeling of excitement they did ten years ago, when they were the only large group of modern buildings in Nigeria. By the example of erecting them the college did much to educate Nigeria, and the many fine new buildings in Lagos and Ibadan, seen before one reaches the college, may reduce its dramatic impact while showing its wider influence.

Our building programme proceeded in parallel with our academic developments. We were committed to degree courses which would be of as high an academic standard as similar courses in Britain, but at the same time would be related to African problems. The political situation in 1947 and during the period up to Independence (1960) affected us considerably. As I have already mentioned, it was essential that any graduate from Ibadan should obtain a qualification which ensured that he received the same treatment, if employed by the Nigerian government, as either a Nigerian who had gone to a British university or an expatriate graduate entering the country. Experimental courses, however desirable academically, would be difficult to evaluate, and so were ruled out.

Early in 1948 the college was accepted by London University into a 'Special Relation'. This meant that our students would work for external degrees of London University, but that the college would play a considerable part in arranging the courses and in examining the candidates. This special relationship had been invented in order to make sure that the overseas colleges like Ibadan maintained the high academic standards of London University, and that this fact could be publicly demonstrated. At the same time, it allowed courses to be arranged so as to be particularly suitable to African students. Thirdly, it gave the staff of

young colleges invaluable experience of planning and examining courses in collaboration with experienced colleagues in London.

In theory the 'Special Relation' could have allowed a completely new type of course to be evolved. As it was, our syllabi seldom differed except in detail from those operating in London. In biological subjects, common Nigerian animals and plants were substituted for temperate species as 'types'. In history, special papers dealing with Africa were included. More revolutionary changes were made in the agricultural course, but even this followed much the same plan as that in force in England. Some people were disappointed because we were not more revolutionary. The reasons why we were not are simple. First, we had to use the existing textbooks. Secondly, many courses (e.g., mathematics, chemistry) are of universal application, and there is no specific 'African' version. Thirdly, most of our staff, both African and European, had insufficient experience of Africa to be competent, at the outset, to modify their courses. Finally, we were all so fully occupied with our existing students that there was little time to make long-term plans.

Nevertheless we were anxious to modify our syllabi whenever possible. This had one unexpected result. The first 'Special Honours' course offered was in classics, not because this was considered particularly relevant, but because no one thought it necessary to modify it at all! We had some adverse criticism for having a classics department at all, but I am quite happy to defend it. I would have been worried had classics predominated in our Arts Faculty, but I think it was right for it to be represented, and for some of our students to study these subjects. Graduates from our first class entered the government's Administrative Service, and I have no doubt they found it useful to have had an education similar to so many British administrators. They could at least speak the same (dead) language!

I have already mentioned two difficulties in arranging new courses, the lack of suitable textbooks and the lack of information. It was clear that a great deal of research was needed in all fields before textbooks could be written and syllabi planned. We had always intended that Ibadan should be a centre of research, as we had accepted the view that this was essential to a university and without it the teaching would be uninspired. I still accept this

view, notwithstanding the cogent arguments of my friend, Dr A. P. Rowe.⁶ It seems to me particularly valid in Africa, where much of the research must be the basis of the teaching. No doubt some research at Ibadan, as elsewhere, was trivial and ephemeral, but in many subjects it *has* affected and improved the teaching as well as advancing knowledge for its own sake. This is true in all faculties, Arts as well as Science. In Agriculture, as I shall mention again later, insufficient research has made much of the teaching, not only at Ibadan but also at non-university standard colleges, of limited value. The same is true of Medicine.

Medicine did indeed provide special problems. Although it is now suggested that there is no reason why a Nigerian medical qualification should be linked with a registering body in England, in 1947 this was a burning issue. An earlier government medical school gave a 'local' qualification; this gave rise to much ill feeling. The college at Ibadan would have been damned from the outset if it had followed this example. The great difficulty in teaching medicine was to provide a hospital where clinical instruction of a standard compatible with the requirements of the British General Medical Council could be provided. We had various false starts before the Nigerian government produced some £5,000,000, which allowed the fine teaching hospital to be built. The scheme laid down for the Ibadan medical course was closely related to the British requirements, but with more instruction in tropical diseases. However, our clinicians believed that they had to teach 'medicine in the tropics' rather than 'tropical medicine'. The trouble about our course was that though it produced excellent doctors, they were not what the country desperately needed. Nigeria, like so many developing countries, needs preventive or social medicine rather than curative medicine. So far the college has not been able to modify its syllabus sufficiently to meet this need. Also, although the college was responsible for starting, as an institution allied to the teaching hospital, a school of nursing with the highest standards, it could not do much to train the mass of orderlies and public health field workers who will eventually be needed, even more than clinicians, in a country like Nigeria.

Today the whole structure and arrangement of our degree

⁶ Rowe, A. P., *If the Gown Fits* (Melbourne University Press, 1961).

courses, in all subjects, has been questioned. While it is agreed that it was probably necessary to follow the pattern of Western education, particularly for degrees in applied subjects, yet many think that it should also have been possible to widen our field so as to teach Nigerians more about their own country, rather than about Europe or America. This would, of course, have been valuable, but in Africa it is sometimes difficult to decide just what is meant by a student's own country. Should a Ghanaian undergraduate be compelled to learn about the social customs of small tribes on the Cross River in Nigeria, any more than students at the Sorbonne should necessarily study the history of the Scottish clans? 'Africa' is hardly an entity, and Africans from one area may have less in common with others from a different region than they have with British or French or Americans. Even when it is possible to decide on some aspect of African culture which should be given prominence in a university course, it is difficult to decide just how it should be included.

One great difficulty about devising new and relevant courses is that they tend to become too difficult and too all-embracing. It should be remembered that even at the University of Keele, where much valuable material covering a wide range is included in the degree course, this takes a year longer than in most other British universities. Several syllabi put forward in all seriousness at Ibadan would have made it necessary to extend the degree course by two or three years! In our early years we had to admit undergraduates, most of whom came from schools with no sixth forms, and this meant adding at least a year anyhow to the degree course if the final standard was to be adequate. Even this gave rise to the criticism that we were treating our students as 'inferior' and making their course harder than necessary. It would have been impossible to 'get away with' the introduction of subjects not normally included in England, however desirable. I am not convinced that, under the existing circumstances, such introductions would have been valuable.

Another serious criticism of our curriculum was that not only did it not teach our students about Africa, but it even tended to alienate them from their own people. Furthermore, it was suggested that once a considerable number of this particular type of graduates had been produced, they might form a sort of 'vested

interest' which would perpetuate this kind of education. There is some substance in this argument, but it is possible that quite opposite results may, eventually, appear. As Dr Amar Kumar Singh showed, in his article in the first number of *Minerva*,⁷ some Indian students come to appreciate their own culture best after being educated in Britain. Although at first an introduction to European education may cause some African students to neglect anything African, it has undoubtedly aroused a real interest in others, and the methods they have learned have then enabled them to advance African studies in a way few expatriates could equal.

There is one worry which is shared by all educationists working in countries which are moving towards independence. This is, that the high academic standards they have tried to establish may later be debased. While we had no wish to create an elite which was alien in its own country, we felt that the more highly-qualified Nigerian graduates we could produce, the more chance there was that their academic standards would be maintained and passed on after independence. I feel that the Nigerians learned this lesson successfully; they might not have done so had we been readier to experiment.

High academic standards are only possible if there are sufficient students of an adequate calibre and with a background which enables them to profit from their courses. There are many misconceptions about African undergraduates. I remember a visitor to Nigeria suggesting that our students were 'much nearer to nature' than those in Europe. He had travelled through the country and seen that the majority of the population were villagers engaged on subsistence-farming, and he assumed that our students came from the same background. Even in Britain few university places are gained today by the children of manual workers as compared with the academic successes of children of the professional classes. In Nigeria hardly any students, at least in the early days, came from the villages. Most were the children of the professional minority living in the towns. Long before they came to Ibadan they were cut off from much that was 'African'. Quite a high proportion had been educated in boarding schools, many of the best run by Christian missions on the lines of English public

⁷ Singh, Amar Kumar, 'The Impact of Foreign Study: The Indian Experience', *Minerva*, I (1962), 1, pp. 43-53.

schools. These had less difficulty in adapting themselves to university life than have some English boys and girls from day schools and homes without any academic background.

Perhaps the most important factor in the lives of most of our students was that they were Christians. The majority of the population of Nigeria is either Muslim or pagan, but most of the educated classes are Christian, due largely to the educational work of the missions. Some critics have doubted the seriousness with which the students held their beliefs. In my experience, the majority in my day did so sincerely. There were no religious tests at Ibadan, and no official pressure to attend the voluntary religious services. It was known to the students that many of the European staff were agnostic. Nevertheless most undergraduates attended chapel regularly, and took an active part in the work of religious societies. Students with a pagan background might have been less easily assimilated.

I always felt that the majority of our students, while in residence at Ibadan, had more similarities than dissimilarities to students in a British university. Those who have taught in British universities only may find this difficult to accept, for they often find African undergraduates in Britain very different from British undergraduates in the same college. I think the explanation is that when they come to Britain, Nigerians are conscious of being in the minority, and this affects their attitude and their conduct. In Nigeria their home life, their schooling, and their religious background is such that, superficially, at least, they easily assume the role of the undergraduate as we recognize it. This made our task in starting the university much easier. It may also have made us over-complacent, and insufficiently ready to recognize any differences which existed.

A new African university might have been expected to have some new form of constitution. However, at Ibadan we copied almost exactly the pattern of organization of an English provincial university. This had a Council as the supreme governing body; about a third of the Council members came from the academic staff and the remainder were drawn from various fields in public life. The academic governing body, the Senate, included the professors and a minority of elected lecturers. In Britain it is generally agreed that this constitution was efficient in small, newly-estab-

lished universities, but today, when these have grown so much larger, it is thought to put too much power into the hands of the professors and to debar most of the staff from playing a part in the organization. No doubt in Africa similar difficulties will arise—and will be as difficult to solve!

Our constitution did serve to establish academic freedom in an institution almost entirely supported by government funds, but had government wished to interfere this could not easily have been prevented by ours or by any other constitution. I do not think we could have invented a more specifically 'African' constitution, or one more fitted to the needs of the country. The 'Ashby' Commission certainly felt that the new universities could do worse than follow the example of Ibadan.

So far I have assumed that we were right in creating a university which fitted roughly into the academic pattern found in Britain, and, to a reasonable extent, in other developed countries. Some writers, struck with the poverty of West Africa and the need for economic development, have suggested that we were wrong, and that we should have produced simpler, cheaper institutions, more closely associated with African needs, and giving particular attention to agriculture. I do not agree with this suggestion. First, it would have been politically impossible. In the days when Nigeria was still a colony, quite a number of colleges on these lines were started by the government. Nationalist politicians condemned them as attempts to 'keep the African down' and they enjoyed little confidence among any section of the population. Secondly, if such institutions are to justify themselves, we must know exactly what to teach, and we must be sure that this will give quick practical results. I could not devise a syllabus in agriculture which would do this. So much basic research, of a kind best done in a more-or-less 'traditional' university, is needed first. When it has produced the results, an efficient extension service may be devised, but I believe this should eventually be based on an institution with the highest standards.

The critics of our type of university complain that its graduates are not only culturally divorced from the community, but that they are economically separated, as they demand (and receive) salaries similar to Europeans and far larger than their country can afford. This is true, but we (the expatriates) could not solve

this difficulty, and I would not wish to reduce academic standards so as to reduce the salaries of the graduates. Several other countries, after independence, have tried to produce a more equal society not only by increasing minimum incomes but also by reducing higher salaries. I believe that the more well-qualified graduates we can produce, the more likely it will be that a country can afford a proper educational system. Poorly-qualified graduates are no more likely to accept low salaries than well-qualified ones!

In conclusion, it will be seen that we created what was essentially an English-type university, into which our students fitted as well as do their counterparts in England. We tried to adapt our syllabi to African needs, but made few fundamental changes. I think, on reflection, that we followed the right course. We tried to bring academic values which would enable Nigeria to take its place among the independent countries. For this, students trained in the Western idiom were needed—men able to cooperate with scientists and writers throughout the world, as well as those who could take part in government and in international affairs. We may sometimes have trained them to study the wrong subjects, but I believe that a good training in the wrong subject is better than a bad training in the right.

However, a university should all the time grow and change. We tried to create a viable organism, not tied down too much in any direction. I believe that it can and will become a truly Nigerian university, retaining the academic standards we tried to instal but adapting its curriculum fully to the needs of West Africa. This adaptation can only be made by Nigerian scholars. We were perhaps too slow to give our Nigerian colleagues sufficient voice in our plans in the early days. Some were not over-anxious to commit themselves! Today Nigeria is self-governing, and it is the Nigerians themselves who will decide what the University eventually becomes.

AFRICAN STUDIES IN AN AFRICAN UNIVERSITY

SABURI BIOBAKU

I

ONE WOULD have supposed that the necessity for African studies as a university subject, especially in Africa, is beyond question. Yet, there exists a serious division of opinion amongst academics; not as to the need to study and understand African problems but as to how best to do this without upsetting the traditional academic applecart. Those who are doubtful about the validity of African studies as an academic discipline can marshal weighty arguments in support of their hesitation or opposition. They fear the consequences for the old and established disciplines of anthropology, sociology, history, geography, economics, if African studies were to emerge on its own, casting, as it were, a blurring shadow upon the edges of these disciplines. Would African studies emerge as a hybrid or an amalgam taking into its bosom some of the well-known aspects of these disciplines? It would, in any event, be unsatisfactory since a dabbling in such diverse disciplines cannot permit intensive study of any and so must fail to satisfy the canons of sound academic training. Or would African studies merely appear as the study of subjects relating to Africa as a geographical entity? How does one justify such a geographical organization of studies? At best, it could only take the form of the application of certain disciplines to illumine Africa as a region of the world. If this were admissible, should one have this kind of African studies in Africa, especially as no one spoke of English studies, as such, in England until the emergence of the University of Sussex? After all, an African university cannot help but study Africa in the normal course of its university functions. Why make the whole a part, by distinguishing and separating African studies

specially from the rest of the courses of study in a university?

Viewed from the angle of research, the position is equally unsatisfactory to the sceptics about African studies. In an African university the various academic departments in the different faculties would, in the pursuance of their normal business, undertake research into their proper subjects—be they mathematics or physics, English or French, anatomy or biochemistry—and the important thing is that they should thereby contribute to the advancement of universally valid knowledge of the subject as such. The use of African data might at best serve only to test and illustrate the universal validity of their contribution. The sceptics might grant that the position could be different in history and the social sciences: the importance of their contribution might be enhanced by their detailed studies of the African situation. But if this happens in history, the product is African history, not necessarily African studies. As regards anthropology, no one would deny that Africa might well supply its most appropriate sphere of interest and activities. It may be that the specific African researches of an African university ought to be coordinated. If so, what is desirable is an organization which might help to raise and supply funds for local research to the departments, loosely coordinate efforts and, perhaps, regulate the flow of the academic intruders from Europe and America who are swarming on to the scene. But an institute which attempts to do more and certainly which tends to regard African studies as a definable discipline is doomed to failure! Such is the sceptical position on African studies.

II

This reluctance to recognize African studies as a distinct academic sphere, more evident in Europe and territories just emerging from European tutelage and less noticeable in America, might have sprung from a long-established tradition of a university serving as a vehicle for transmitting Western civilization. An academic who is steeped in this tradition may unconsciously oppose any innovation which presupposes that a university can be made to serve a different purpose. Essentially, university education in the West was designed for Westerners and its extension to persons of dependent territories was to be seen as the fulfilment of an 'imperial'

mission whether it be that of 'assimilation' in the old French style or to make the African a better African in the British sense. Oriental and African studies—even Slavonic studies—might be attempted and institutes devoted to them, but the object of the exercise is the understanding of those peoples. As regards Africa there was neither the impulse nor the duty to establish the existence and affirm the value of an African culture and assist its transmission to, and diffusion among, its peoples.

Yet that is the inescapable duty of an African university. Every great university has been concerned with the teaching and the establishment of universally valid truths about subject-matters of equal concern to pursuers of truth everywhere. That is why the universally valid fundamentals of mathematics, physics, physiology, chemistry, geology, astronomy and similar disciplines belong in universities everywhere. In addition to this, universities are justly concerned with the clarification, assessment and elaboration of the cultural traditions, and the practical problems of the society in the midst of which they live and which they attempt to serve. They are also concerned with their parochial environment; their own problems of agriculture and animal physiology; their own problems of animal genetics; their own medical problems. It is right that German universities should, for example, pay more attention to German literature and language, to German society and history, than do British or French universities, and for Christianity, theology and church history to be more studied in the West than in the Orient. These might be designated as the 'parochial' tasks of the universities. It is not for purposes of glorifying their cultural inheritance that these 'parochial' obligations should be accepted, but rather for studying that inheritance and analysing those problems by the universally valid techniques developed by linguists, literary criticism, paleography, historiography, geology, genetics, botany, the social sciences, and other well-established academic disciplines.

The African universities are in a similar situation. They have to cultivate subjects of universal concern and validity; they have also to cultivate, by means of techniques of universal validity, the study of their own 'parochial' African inheritance and environment.

It involves for the African a far-reaching reorientation of the

form and content of higher education but it also affords it a new zest. This enterprise is, of course, beset with pitfalls. It has its own dangers. First, it involves a rediscovery of the true past of Africa and the Africans but this must not be romanticized unduly; it must not degenerate into chasing a past glory that never existed. There must be no pandering to the African jingoists by simply rejecting one extreme view of regarding Africa as having no worthwhile culture whatsoever and embracing the other, of idealizing everything African. Secondly, the magnitude of the task of the reorientation should not be underrated. It must be remembered that the unfolding of a culture which has long lain in decay is more than a lifetime assignment for any scholar. It can be accomplished only after prolonged study and research involving several generations of scholars. Thirdly, there is the danger of falsifying findings in order to conform with ephemeral notions of past glories or to suit some transient political necessities. On no account should the scholar compromise his academic integrity or connive at the enthronement of mediocrity just because it pleases.

It is obvious that no university that is 'worth its salt' and enjoys a reasonable measure of academic freedom will fall into those pits of academic dishonesty mentioned above. Moreover, the task of reorientating African university education is not one for Africans alone, although they may be expected to play a major role in it. There is the universal duty of all scholars to pursue knowledge in the direction of ascertaining the African cultural heritage and its contribution to the culture of the world and in performing this duty all races must be mobilized and encouraged to work harmoniously.

III

Once it has been admitted that African studies might be organized in an African university, the dilemma begins. How does one start? Frankly, the simplest way is the *tabula rasa* approach; to start with the clean slate of organizing an 'African studies university'. In such a university one could happily ignore the old notions of faculties and departments and so group all studies round the central idea of illuminating the culture of Africa and its civilization. Unfortunately, this approach is an untenable one and, para-

doxically, the strongest opposition to it will come from the Africans.

Africa is anxious to experiment, but it must be understood that it also wishes to ensure that experimentation comes only after it has shown its mastery of the established and authoritative techniques of analysis and interpretation and its familiarity with the age-old canons of judgment and taste. Exhorting Africans to adopt new and different 'African' methods or approaches before they actually exist would be a 'palming off' of an inferior article on the Africans, whose suspicions would be thereby immediately aroused. Innovation comes more easily once confidence and self-assurance have been achieved, and a people at one time supposed to be inferior in culture can best demonstrate their inherent equality by mastering the same *corpus* of knowledge as their mentors rather than by striking a new line which might somehow be adjudged inferior.

'African studies', even in an African university, must therefore come into the curriculum, not to supplant the traditional disciplines of the Western universities but, in fact, only after they have been fairly entrenched in the university system. The introduction of African studies must, therefore, encounter the inevitable opposition of some of the practitioners of those disciplines and, indeed, some suspicion. University resources, especially in Africa, are notoriously limited and so to divert some of them to the establishment of African studies in a department or an institute is to deny them to the older departments whose much needed consolidation or expansion would have to be postponed or abandoned in consequence. Unless there are some favourable circumstances such as the presence in the university councils of an influential advocate of African studies, progress is bound to be slow and one would have to be content with a modest start.

I V

A good start might take the form of establishing an institute of African studies as a research centre within the university. It should be a centre for the study of the past of Africa and its present-day problems. Such a centre to be fruitful must be interdisciplinary in its approach; it should be an organization which could afford opportunities for 'canalizing' research in subjects germane to Afri-

can studies proceeding in existing university departments and ensuring their true relevance to the African scene. It should provide financial nourishment and support for such research and attempt to coordinate it and afford it a *locus* for the discussion of methods and findings among the different disciplines that are represented at the institute. If the institute could be directed by one person, interested and experienced in interdisciplinary cooperation in research and able to enlist support throughout the university, it will produce better and quicker results than one which is entrusted to a committee drawn from the different disciplines none of whose members is wholly committed to the interests of the institute.

It is also essential that the institute, however small, should have its own cadre of academic staff; its own central core of research workers. This staff, which could be interdisciplinary, should be organized into a team. The members should be full time research workers who are at the same time available to give lectures and a helping hand in the teaching departments. Correspondingly, full time lecturers in the departments who are interested in African problems and whose work deals in any way with African development and African society and culture should be associated with the institute. In this way, the institute and the departments would gain through cross-fertilization of ideas, and by teaching and research not proceeding in watertight compartments, both will gain in vigour and vitality.

The research centre would afford opportunities for postgraduate work which might lead to higher degrees in the appropriate disciplines and university departments. Thus a postgraduate student working on an aspect of African history could be supervised within the institute but would be entered for his higher degree in the department of history of the university, and in examining him experts from both the institute and the department would cooperate. The research aspect of African studies needs the most rapid development; for extensive individual researches under competent supervision are essential in order to establish a sufficient *corpus* of knowledge in African studies which can then be disseminated and taught in the universities. The task of book-writing is also a pressing one; but it must be preceded by that of discovering and authenticating the material to go into the books.

V

The lack of suitable teaching materials and books to be prescribed either as texts or for background reading is one reason why undergraduate teaching in African studies should not be rushed. As research progresses, the quality of teaching as regards Africa will improve; but to designate a subject too quickly as 'African studies' for undergraduate work is merely to confuse the students. One expedient is to treat African studies as an aspect of general studies which is made compulsory background work in some universities. The danger here lies in the fact that a hasty adoption of African studies as a compulsory subject, even on the level of general education, merely adds one more unpleasant examination hurdle which the students must leap over and, with inadequate teaching and insufficient works of reference in a field in which both teachers and students are clearly beginners, the result might be disastrous. Far from inculcating the love for and understanding of African culture, the effect upon the student might well be the opposite one of leading him to 'wash his hands' of it as soon as the hated examination chore has been successfully accomplished.

A more satisfactory alternative to that of making African studies a compulsory background subject for all undergraduates, at least in their first year, is that of whetting the students' appetite for African studies. Their interest can be stimulated by means of carefully prepared, well illustrated and delivered open lectures by well-known experts and authorities in the subjects and attended by both staff and students. Such lectures can easily arouse curiosity and, as they are not compulsory, interest is sustained by the sheer pleasure of doing something worthwhile at one's own option. It should not be supposed, however, that there are no difficulties in adopting this approach; optional lectures can be easily 'dodged' and the stimulation of interest might prove slow in view of extracurricular commitments of the undergraduate, who must weigh the attraction of these against that of the open lecture, and he may require the favourable report on his less committed colleagues before he finally attends his first lecture. If the lectures are good, however, the news soon spreads and capacity attendance may well follow.

After the undergraduates' appetite has been aroused, more sys-

tematic undergraduate teaching can be attempted, thus introducing some aspects of African studies as integral parts of the various courses of study leading to a degree. Once the tradition of listening to lectures in African studies has been established, it can be gradually extended; but if the response to the voluntary approach is inadequate the subject might subsequently be made compulsory for all first year students as a cultural requirement, although it need not be 'damned' by making it an examination chore. There is, of course, no reason why African studies should not be an examination subject once it has been integrated with a degree course; but then it will be so only for those who have elected to study it themselves.

VI

Another controversy centres on whether or not one should establish a professorship of African studies straight away. If so, what should it embrace? What should its holder profess? There is no obvious answer to this question and the complexity increases as one contemplates the range of subjects which can conceivably come under the umbrella of African studies. It will be generally agreed that the twin objectives of African studies are (i) to discover, analyse and assess Africa's past civilization and culture; and (ii) to provide clues for the rapid modernization and development of Africa. Under its first wing can be accommodated disciplines such as anthropology, sociology, ethno-history, archaeology, African art, linguistics, etc., as well as an incursion into the study of ancient external influences upon Africa and the manifestations of its indigenous religions. Under its modern wing can be encompassed the economics of underdeveloped areas, indigenous political systems, customary law, problems of emergent African nations and of African unity. For a man to occupy and adorn a professorial chair comprising all these subjects in its range, he must be an 'admirable Crichton' of Africa. It is equally sanguine to expect a student to specialize in and master all these varied subjects and disciplines at the same time. Yet the paradox is, in fact, that the African student, whilst not mastering all, must be made aware of the part each discipline can play in the study of Africa; otherwise he will not be fully equipped to play a leading role in the cultural

integration of Africa with the rest of the world. An African graduate who knows nothing of African studies will miss being African in the modern sense.

VII

One way of tying together all that has gone before is to describe in some detail the experiment which is at present taking place at the University of Ife in Western Nigeria. At its temporary seat in Ibadan the university has established an Institute of African Studies upon which it places a high premium. The institute is organized along the lines of a research centre; it is interdisciplinary in its organization and approach; it cooperates with relevant university departments; it concentrates upon postgraduate studies while working gradually towards undergraduate teaching and the eventual emergence of African studies as a discipline in its own right.

The institute is under the leadership of a director, and while it functions in the spirit of teamwork it must, of necessity, be organized in divisions which mirror the different disciplines it comprises. The divisions are by no means watertight compartments and all members of the institute are associated as closely as possible with all aspects of its work. In the division of anthropology and sociology, it is planned to cover comparative society; primitive man in Africa, his life and culture; peoples of Africa; dynamics of social change; urbanization in Africa. In the division of archaeology, the history and technique of archaeology; Egyptology; excavations in Africa and recent archaeological finds are to be covered. The division of ethno-history, art and folk culture offers scope for the study of the history of non-literate societies, African art including prehistoric art; ethno-musicology; folk literature, drama and the dance. In the division of languages and linguistics we hope to survey African language structures, study specific African languages such as Yoruba, Igbo (Ibo), Hausa, Edo, Efik, Fulani, etc., as well as work on language-learning techniques and take into account modern African literature. The division of Maghreb and Arabic influences is expected to deal with Africa and the Near East, early migrations, introduction of Islamic cultures; classical Arabic; and the early Sudanic empires. In our sixth division, called for convenience the division of Africa-

in-transition, we have listed African political science, African customary law, social values, economics of underdeveloped areas; problems of emergent African nations.

As previously emphasized, the aim is to coordinate the work in all the divisions whilst each forms a miniature academic entity which is capable of growth and development. An organization such as this must be served by a good working library of Africana, readily available to the research workers although remaining under the ultimate control of the university librarian, if unnecessary duplication of books and a lopsided development of reference facilities are to be avoided. It is also essential that such an institute should be associated with national museums and, accordingly, the Ife institute plans to cooperate with the Ife Museum, the Nigerian Museum at Lagos and the budding museums at Benin and Owo which are at present in the same region of the country as the university. Meanwhile, the institute hopes to assemble its own art collection which will afford ready access to specimens for research and teaching in due course. Illustrative materials are vital to the success of the work of the institute; recordings and films must be undertaken in order to preserve for study some of the cultural festivals and customs which are rapidly dying out. It is essential, therefore, that provision be made for photographic and recording equipment and also for a technician, who combines practical with artistic bents, in order to take charge of the technical aspects of the work of the institute, to undertake repairs and remodel specimens.

The activities of the institute are arranged in two levels. At the postgraduate level the institute fulfils its primary function as a research centre. Although it has no postgraduate students at its present initial stage, expert supervision is available to anyone wishing to take a higher degree in the disciplines represented at the institute, and the Director, who as leader of the research team, is available to act as guide, philosopher and friend to the more junior members of the team who normally discuss their research projects with him from time to time. All postgraduate members of the institute benefit from the interdisciplinary seminars which are open to them and to other interested graduates from within or outside the university. These seminars are presided over by the Director, who coordinates them, and are based upon papers

written on related topics, previously circulated and read in order to ensure maximum opportunity for comments and discussions. These seminars are to be supplemented by occasional open lectures, given by specially invited distinguished authorities from overseas and within Nigeria upon topics dealing with current problems of African development and culture. In addition the institute plans to hold conferences which will bring distinguished Africanists to the university with a view to discussing matters of common interest. The occasion could be one of a scheduled meeting of an international congress or a specially commissioned conference to deal with specific topics of immediate relevance, e.g. 'Problems of African Unity'.

Other activities in this category which are contemplated include the holding of periodic exhibitions, staged either in the associated museums or at the institute, with a view to calling attention to specific aspects of the institute's work or giving publicity to a new find of artistic merit or historical significance. Excavations are on the list too. There are well-known archaeological sites in Ife and Old Oyo which await large-scale excavation and it is the aim of the institute to attract international support for such ventures in which not only the senior members of the university of Ife but also scholars from other African universities and elsewhere would participate. The result of the researches and other activities of the institute as it progresses deserves to be recorded and made available to other scholars who could comment upon them as well as profit by them. Hence the need for an institute journal aiming at a high academic standard and welcoming contributions from all over the world.

At the undergraduate level, as already indicated, the activities of the institute are mainly exploratory at the initial stage. The use of open lectures designed to attract undergraduates as well as members of staff has already been mentioned. A more positive experiment in contemplation is the institution of regular courses which could form a part of the Part I examination in the bachelor of arts combination of subjects. It is hoped to bring in a range of courses of the life and thought variety; say, 'Yoruba Life and Thought', by October 1964. This can be followed by other courses in the series, Akan, Mende or Fulani Life and Thought, and gradually it is to embrace other peoples of West Africa in the

scope of the courses. Each course would be an interdisciplinary presentation, calling for the cooperation of all the divisions of the institute and also of some relevant departments of the university. This will be a most pertinent experiment in evolving a lecture course embracing several disciplines but with the common objective of laying bare the culture and 'social reality' of an African people. No doubt the lack of suitable texts to be prescribed to students will be a limiting factor in the evolution of such a course but its success will also be a sure test of the validity of the interdisciplinary approach.

Moreover, the institute, as has been indicated earlier, must be willing and ready to cooperate with the university departments in their teaching commitments. As the University of Ife develops its system of 'electives' or optional subjects required to qualify beyond the preliminary or Part I stage, the institute will be asked to provide suitable courses for some of the departments and this it should be prepared to do.

VIII

The Ife institute has been functioning for only about six months but an evaluation of its experience is possible owing to the extraordinarily good luck of the university in securing the services of some first-rate staff members so early in the life of the institute. It also owes its good fortune to the generous and understanding support it has received throughout the university. From the predominantly lay Council and the Academic Board alike, the institute has enjoyed unalloyed support, and the pride which everyone takes in its establishment has been a valuable source of encouragement to all its members.

To each of the divisions at least one appointment has been made, which makes it possible for work to begin in all of them simultaneously. Fortunately, also, two distinguished persons from America, one on a cost-sharing basis with a New York institute and the other on a Ford Foundation fellowship grant, have made their services available to the institute. A member of the Brazilian Institute of African Studies at Bahia has also been attached to the institute, studying Yoruba language and culture and offering in exchange to teach Portuguese. In terms of nationality, the pre-

sent full time members of the staff of the institute and associated research fellows comprise two Nigerians, one Sudanese, two Englishmen, one West Indian, two Americans, one New Zealander, one Brazilian. This is a practical demonstration of the belief that in selecting staff the only relevant qualification must be interest in Africa and ability to contribute in a special way to the study of Africa, without undue preoccupation with nationality. Africans have, as we said, a duty to study their continent and its problems, past and present, but we should do so not in a monopolistic sense but in association with all those who wish and are qualified to help us.

With the willing cooperation of the members of staff it has been possible to commence the various activities of the institute. The seminars have started and have attracted scholars from the university and its older neighbour, the University of Ibadan. They have, in fact, proved to be so popular that it has been necessary to divide them into two types: open seminars to which all can come after signifying their intention to join and participate in their work; and staff seminars, which are limited to members of the institute staff and a few invited outsiders with particular interest in or knowledge of the subject so as to ensure maximum opportunity for discussion of the papers which might be of limited interest or exploratory in their approach. The seminars to date have covered topics ranging from the impact of Christianity upon a people of the Niger Delta; consideration of the *Ogboni Edan* as an art type; a review of sources relating to the Arab contribution to the history of Western Sudan; to a tentative analysis of students' political attitudes, and an examination of the social context of the situation of Oyo-Yoruba hunters' chants, the *Ijala*, with live demonstrations. There have been only two open lectures; one by an archaeologist on the subject of 'Dragons in Libya' and the other by a sociologist from the University of Ibadan on an interesting typology for African kingdoms which he has propounded. This latter lecture shows the spirit of willing cooperation between the two neighbouring universities which is also apparent in the fact that the institute seminars draw a large proportion of their participants from the University of Ibadan. It must be admitted, however, that undergraduate attendance at the open lectures requires some stimulation, and a change of the timing to

later in the evening than was previously envisaged promises to result in increased participation by students, who have other attractive commitments including outdoor games in the late afternoons.

A most encouraging sign has been the request from the university departments for the institute staff to assist them with specialist teaching or tutorials. Despite the general support so readily accorded the institute, it is natural to expect that there could have been a certain amount of envy of the institute, which has been so fortunate in having such an excellent staff engaged mainly in research, on the part of the departments whose teaching staff are hard pressed owing to a shortage of hands. The interesting point is that, rather than nurse that envy, the institute is being regarded as a reservoir of talent upon which the departments could draw as the need arises; indeed, as a second line of defence when the departmental forces, as it were, prove to be inadequate to cope with the task. Accordingly, requests have been received and are being met for institute experts to undertake lectures in 'Indigenous Religion and Islam' for the Department of Comparative Religion, to undertake tutorials in political science and lectures in economics for the Faculty of Economics and Social Studies; and also to undertake full degree courses in Arabic and Yoruba for the Faculty of Arts.

The institute appears, therefore, to be already fulfilling the hopes of its founders, which were that it would quickly become a centre for post-graduate discussion of African studies subjects, of scholars pursuing their own chosen researches in those fields while at the same time affording valuable assistance to the university departments in discharging their teaching responsibilities. It is for this latter reason that the members of the staff of the institute have been designated 'lecturers' in contradistinction to 'research fellows' since it is firmly believed that research workers would benefit enormously by lecturing occasionally. Lecturing would compel them to marshal their research findings for the purpose of imparting knowledge to their students, and, incidentally, they may in so doing become aware of some of the gaps in their research.

On the debit side, experience in the institute has thrown up some of the difficulties of establishing such a centre for the pur-

suance of African studies. To begin with, it is an expensive venture; a costly institution, as already hinted, is bound to be the source of friction with other university units since much of the resources equally needed elsewhere must be diverted to it in order to establish it firmly. A well-designed building which would provide ample space for the activities of the institute is essential as we have found out, since we are now housed in temporary quarters at least six miles distant from the main university buildings. The result is that the institute cannot operate fully from its own buildings; its offices are housed in one place and its seminars and other public activities must be conducted elsewhere in order to have sufficient space and if undergraduates are not to be debarred from participating in them. Lecturers have no rooms of their own to work in at the institute and many have to work in their homes. The institute also requires ample secretarial assistance in view of the masses of papers which must be duplicated and circulated to members of seminars and conferences in addition to the normal secretarial duties essential in running an office.

Travelling for the purpose of research, collecting oral evidence or materials, is essential and necessitates adequate financial provision for the lecturers for this purpose. Funds are also required for purchasing articles for the art collection and even for paying informants and demonstrators of drumming and dancing. We have been inhibited in our desire to invite distinguished visitors from abroad to deliver open lectures on matters of topical interest by the sheer cost of such an invitation in terms of air or sea passages, subsistence allowance, or honorarium. For the activities of the institute to be complete there must be financial provision for this essential reinforcement of local talent without which the attraction of the institute would soon lose its lustre and its usefulness would be unnecessarily circumscribed. Sometimes we receive requests for the support of work of scholars and experts in fields which are of interest to the institute and where results of enormous benefit to African studies in general might be obtained, but we are obliged to turn them down owing to lack of funds. It is impossible for the institute to appoint to its staff all those who can advance its work. With a little subsidy or grant here and there it would be possible for it to assist some struggling scholars whose labour can thereby receive a powerful stimulus and the result be

much improved. Indeed, funds for attracting fellows from abroad or appointing associates within the country are essential if the work of the institute is to remain first-rate and to be invigorated by the interplay of varied intellects made possible by having distinguished outsiders participating in the ventures of the institute from time to time.

IX

Research in the field of African studies is becoming increasingly popular. Previously, anthropologists might have been said to have ruled the roost with sociologists following in their wake. Historians at first adopted a defeatist attitude thinking that as many African societies had no indigenous systems of writing, and therefore no written records, they *ipso facto* had no history. Times have altered and historians are now fashioning new techniques and weapons in order to reconstruct the past of African peoples. Economists are also entering the field, and, as for political scientists, they are pouring in with subjects varying from surveys of undergraduate opinion and attitudes to problems of federalism in a country with a federal constitution such as Nigeria and the imperatives of African unity. Apart from research which is proceeding in the African universities as part of the normal activities of their staff, that undertaken by visiting research workers is usually financed by one or another of the foundations, American or British, as is also some of that undertaken by staff members of the African universities. The subjects chosen are as approved by the sponsors and/or their home universities, and are mainly of interest to the 'non-African' world. It is recognized that an upsurge of genuine interest in the development of Africa underlies this probing into subjects of particular relevance to the African scene, but it must also be admitted that the purpose is to assist the outside world in its understanding of Africa and how best to supply aid to the Africans who are just becoming free citizens of the modern world. No one would deny the possibility of enlightened self-interest on the part of the Western world which is anxious for the Africans not to be alienated from it, but this 'rash' of research scholars from overseas appearing in Africa is no 'spy ring', as some detractors sometimes aver. It is, nonetheless, orien-

tated towards the interests of the academic world of Europe and America, and although it sometimes takes the form of confirming preconceived notions about Africa and the Africans, most often it represents a genuine attempt to learn.

There is, however, a pressing need for research in African studies that is felt to be really meaningful to Africa and the Africans; it should be truly 'Africa-centred' and be concerned with matters and topics which are of real interest to Africans. Research should be directed as a matter of urgency towards the discovery of what sensitive Africans value most in their heritage; not what the expatriate scholar wishes them to value nor what expatriate scholars think is most essential in their theories. The 'social reality' in Africa is a reality in which old customs are yielding place to new. What is important is to regulate that change so that all that is valuable in the old is preserved in the new. The aim must be to discover that which will illuminate the essential elements in African culture, not to seek to encrust it in a permanent preservative. The task of applied research is to discover that which will help in solving the multifarious problems of modernizing Africa, not to keep stressing the difficulties of modernization and make it appear well-nigh impossible. We do not imply that only Africans should undertake researches into African studies in Africa. On the contrary, such researches are best undertaken on a cooperative basis between the African and the expatriate. The African should know what is wanted and it is the expatriate scholar who has the tools and the techniques required for the job. A combination of both insight and skill is essential. A twofold process is involved. While the African himself gradually acquires the tools and the techniques, the expatriate slowly acquires the insight which is inherent in indigenous experience. Ultimately, there is no denial of the fact that the African must assume direction and control if the outlook and skill needed in research are to take root in Africa.

The ideal solution for the present is not merely to attract expatriate scholars to institutes of African studies in African universities where they can do their research and fieldwork in a favourable academic atmosphere, useful and vital as this may be. Such researches as they may carry out will still be largely piecemeal; each scholar following his own bent and with their results

disparate and uncoordinated. The time has come for coordinated research, if possible, under single leadership. In order to produce enough material from research required for teaching African studies we need to adopt schemes of teamwork on a large scale. We need carefully directed research aimed at extending our knowledge in various aspects of African studies as rapidly as possible while at the same time maintaining the highest academic standards of honesty and probity in our findings. Two examples of such an approach might be cited here. First, there is the Benin Study, employing an art expert, an anthropologist and an historian, all working under the leadership of the distinguished Nigerian historian, Dr Kenneth Dike. Their aim is to study the Benin kingdom in all its aspects, from the earliest times, and from their efforts will emerge authoritative books which will throw light on one instance of African organization, statecraft, artistic civilization and culture. Contemporaneous with the Benin Study is a second example, the Yoruba Historical Research Scheme, with which the present author is concerned. This offers scope for interesting interdisciplinary cooperation embracing archaeologists, anthropologists, art experts and linguists; it also believes in the contribution which its associates such as oral historians, noted local historiographers and traditional bards can make through their knowledge and understanding of the tradition of the Yoruba people. The aim of the scheme is to write a new history of the Yoruba which will pass the test of modern scholarship while at the same time representing accurately the people's understanding of their own history. Between these two schemes the history of the peoples of Western Nigeria is likely to be effectively covered and the two co-ordinated research efforts are expected to bear greater fruit in increasing our knowledge of the history and culture of these people than several uncoordinated researches can do for many years to come.

It is for this reason that one would like to see research in African studies take the form of relatively large-scale undertakings, interdisciplinary and coordinated under African leadership, but with the wholehearted and valuable participation of non-African scholars. If such schemes were to be launched by the various African universities, each concentrating upon their areas, within a short time the whole continent would be covered and the results

would provide useful data for teaching and valuable bases for the research in greater depth which individual scholars would always undertake, pursuing their own interests and following up their hunches. As indicated above, well organized institutes of African studies should afford excellent launching places for these large-scale group research efforts and it is likely that funds can be found for such imaginative projects from private foundations and interested governments. In this way the work of the institutes will be rapidly developed and the objective of establishing African studies as a legitimate academic discipline in its own rights quickly attained.

X

Institutes or departments of African studies are now springing up in African universities. This is inevitable and a step in the right direction. It is necessary, however, that they should not work in isolation from one another. While each is a unit within an autonomous university its work will be greatly assisted if there is the opportunity for consultation and cooperation with other institutes. Towards this end, the establishment of a regional organization will be an important step. For example, there could be a West African Institute of Cultural Research which would embrace the whole of West Africa, English as well as French-speaking. It should be international in its administration and personnel. It should aim to be a worthy centre of research to which all territorial institutes of African studies would look for inspiration and also serve as a focal point for all scholars in the field of African studies. It will be necessary for the regional institute to be served by a comprehensive library of Africana, which would provide at the same time a valuable place of reference and a model for territorial institutes in establishing their own libraries. The West African Institute of Cultural Research would also supply a home for a regional African studies association which would provide a forum for exchange of views, research notes and other materials relevant to this field of study.

It is important not only that institutes of African studies in Africa should maintain contact with one another but also that the whole question of African studies should not be treated in

isolation from external aid and support. As already noted, a most encouraging sign is that there exists a tremendous interest in African studies throughout the world; this interest grows steadily as more African states emerge into nationhood from their former dependent status. African studies institutes or programmes are also springing up in Europe, America and Asia and the work going on in them deserves to be linked with activities in Africa. Moreover, there exist in Europe and America, well-known centres of African studies whose personnel have been pioneers in this field, so that they can help with building up centres in Africa not in any patronizing sense but in a genuine spirit of cooperation. The institutes in Africa can, therefore, benefit enormously from association with these centres outside Africa, obtaining valuable advice from their professors and other experts. There is the possibility of inviting well-known Africanists to serve on advisory boards of institute journals and even on advisory councils of the institutes themselves. The recently established International Congress of Africanists offers the right kind of opportunity for periodic gathering of all those interested in African studies for exchanging ideas and views and also a permanent organization for maintaining contact during the intervals between congresses. African studies can only benefit from a worldwide intercourse of scholars dedicated to its cause.

X I

African studies in an African university is a new but fruitful field of educational development. It is vital to the growth of African universities as worthy seats of learning especially if they are to justify the hopes and confidence which many Africans repose in them, and to contribute to the modernization of Africa. The hope is that the universities will assist in the development of the new nations in Africa not only by providing them with well educated men and women who are urgently needed for a variety of key posts both in the public and the private sectors of their national economies, but also that these educated men and women should be truly African and not pale carbon copies of their former imperial masters and mistresses. The confidence is that the African universities will surely evolve a new identity that will enable them

to fulfil this new role; that they will, in effect, become vehicles for transmitting an understanding of African-attained culture and civilization through the devices of universal validity. Through the proper development of African studies the necessary reorientation of the humanistic and even the scientific curricula of the African university can take place and the whole work of African universities will reflect, as it must do, the culture and civilization of Africa, its own distinct contribution to the great corpus of world civilization.

STAFFING AFRICAN UNIVERSITIES

A. M. CARR-SAUNDERS

IN PREPARATION for the Conference on the Development of Higher Education in Africa, held at Tananarive in September 1962 under the auspices of Unesco, I was invited to direct a study of the staffing of higher education in Africa in consultation with M. J. Capelle, Directeur général de l'Organisation des Programmes scolaires of the French Ministry of Education, and Dr R. Weeks, President of the University of Liberia; M. J.-P. Lacour and Mr P. A. Wilson acted as research associates for the study. The study was made possible by the Carnegie Corporation of New York which provided the necessary funds. Unesco will publish a full report of the conference including the text of the study. In view of the widespread interest in the problems of African universities it is thought that a brief summary of the facts disclosed by the study, followed by some discussion of the consequential problems of staffing and of the steps which might be taken to solve them, would serve a useful purpose. This is what this article¹ sets out to do. The study was concerned with higher education, and institutions of higher education are of two kinds. First, there are universities and equivalent institutions which offer courses leading to an academic degree. They are readily identifiable; normally they enjoy a considerable measure of constitutional independence, and within the particular academic tradition to which they belong they set their own standards, plan their own curricula and recruit their own staff. Secondly, there are institutions offering courses leading to some kind of award or certificate, entrance to which is after the completion of secondary education; technical institutes, teachers training colleges and agricultural colleges are institutions of this kind. This article deals only with the first of these two types of institution; its subject is therefore the staffing of universities.

The study covered all continental Africa, except the Republic of South Africa and the Portuguese territories. The Malagasy Republic, Zanzibar and Mauritius are also covered. The universities found in this area fall into two groups. The first group includes the universities in the United Arab Republic, Libya, Tunisia, Algeria and Morocco; the second group includes all the remaining universities. In my study the first group is referred to as the universities of North Africa and the second group as the universities of Middle Africa. Nearly all the universities of the second

¹ This article is also being published, as a pamphlet, by the Overseas Development Institute, 160 Piccadilly, London W.1.

group were founded on European models under colonial régimes; they teach in English or French. The origin of the universities of the first group is different; teaching is mostly in Arabic; if a European language is used it is usually French. The information obtained by the authors of the study was far less complete for the universities of North Africa than for those of Middle Africa. The paucity of information relating to the former had no serious consequences; as will become clear in what follows, the main problem which emerged from the study was how to meet the need of certain African universities for expatriate teachers from overseas. The United Arab Republic can supply its own teachers, and it is to the United Arab Republic that other North African universities look when they need Arabic-speaking teachers; so far as they need French-speaking teachers the demand, as will appear later, is far more easily met than when English-speakers are sought. In other words the problem of finding expatriate teachers hardly arises for North Africa, and in consequence the study centred on Middle Africa, and it is with Middle Africa alone that this article is concerned.

Staffing Requirements

The assumption underlying the approach to the staffing problem which faces African universities is that they will fill all vacancies in their staffs from among their own nationals whenever fully qualified locally-born candidates are available. It is therefore necessary to estimate the supply of locally-born candidates in the years to come; the findings can be related to the anticipated number of posts, and the extent to which the supply falls short of that number gives a measure of the need for expatriate teachers.

It is convenient to attend first to the number of university teaching posts, and the first step must be to ascertain how many teaching posts now exist and what proportion of them are held by expatriates. The figures which follow relate to the year 1960-61. In the universities of Middle Africa there were 2,166 university teachers of whom 594, or 27 per cent, were locally-born and 1,572, or 73 per cent, expatriates. Most of the expatriate teachers came from a small number of countries, 702 from Great Britain, 257 from France, 135 from Belgium and 107 from the United States. The next largest source of expatriates was India which provided 50. South Africa contributed 48, Canada 29, Australia and New Zealand 26 and the Netherlands 22; there were 19 other countries which made some contribution.

The next step is to obtain some idea of the future number of teaching places. Information on this subject is derived from the

expansion plans of the universities. The universities were requested to forecast the probable number of teaching posts in 1966-67, 1970-71 and in 1980-81. About the figures so obtained three things must be said. First, they represent the hopes and expectations of the universities; they are not official estimates though no doubt universities, when making them, believed that the expansion projected was in accordance with government policy. Secondly, while forecasts for 1966-67 can have a fairly firm basis, those for 1970-71 must be more dubious, and those for 1980-81 can be little more than guesses. Thirdly, the fulfilment of the expansion plans depends upon the availability of the necessary finance. From information so obtained it is estimated that the number of university teaching posts needed by the Middle African universities will rise from 2,166 in 1961-62 to 4,565 in 1966-67, to 6,185 in 1971-72 and to 8,485 in 1980-81.

In order to arrive at an estimate of the number of expatriate teachers wanted by the Middle African universities it is necessary to make certain calculations. We start with knowledge of the present number of teaching posts and of the proportions held by locally-born and expatriate teachers. We know that during the next five years there will be losses through death, resignation and retirement. The wastage through such causes will be small among locally-born teachers; it will be heavy among expatriate teachers who will seek a post at home after a few years. Experience shows that the average length of tenure of a post in an African university by an expatriate teacher is about five years; in other words there is a 100 per cent wastage each quinquennium. Applying the wastage rates we can find the number of places to be filled during the next five years if the total number of teachers, present at the beginning of the period, is to be maintained. We also know the total number of teachers required under the development plans five years ahead. The total number of places to be filled is therefore the difference between the present and the future establishment plus whatever is required to replace wastage.

It remains to estimate how many of the places which must be filled, in order that the development plans may be carried out, will be filled by African graduates. From the development plans we can estimate the number of Africans graduating in Middle Africa each year; to them must be added the number graduating

in overseas universities each year. In 1961-62 there were about 15,000 students in Middle African universities and about 11,000 Middle African students in overseas universities. We shall discuss later the probable number of African students frequenting overseas universities; it is enough to say here that for various reasons we do not think they will increase. Given the number of African graduates coming forward each year, the question is what proportion of them will take up university teaching. For certain African universities which have been in existence for some time we know what proportion of their graduates have in fact become university teachers, and this proportion corresponds to that found in other countries. Using this proportion we can estimate how many of the places to be filled will be filled by African graduates. The balance not so filled must be filled by expatriates.

Calculations on this basis show that the English language universities of Middle Africa will need to recruit 2,200 expatriates between 1961-62 and 1965-66, 2,000 between 1966-67 and 1970-71, 900 between 1971-72 and 1975-76 and 300 between 1976-77 and 1979-80, or from 5,000 to 5,500 in the whole 19 years. The total number of expatriates serving in these universities would not exceed 2,250 at any one time; that would be the maximum requirement of these universities and it would be felt about 1966-67. The corresponding figures for expatriates in French language universities are 800, 600, 200 and less than 100. For all Middle African universities the figures are about 3,000, 2,500, 1,000 and 400. The proportion of Africans among teachers will rise steadily and will be nearly 100 per cent by 1980-81. The number of students in Middle African universities, which now exceeds 16,000, would rise to about 93,000 in 1980-81.

Such are the prospects for the speed of Africanization of the teaching staff of the Middle African universities. But these prospects are based on calculations which take no account of such Africanization of the staff of research institutes as there may be during the period. It must be the aim of the African states to replace expatriates, now serving in the research institutes, by Africans; it may seem to be more urgent to Africanize the universities than the research organizations because the former are more directly involved than the latter in the life of the country which they serve. Nevertheless the Africanization of research or-

ganizations must come about. This has a bearing upon the Africanization of the universities because it is among the same group of graduates that universities and research organizations must seek their recruits, namely, graduates of high ability who have a capacity and a liking for a career devoted to intellectual pursuits. The Africanization of the staff of the research organizations has hardly begun; as it progresses the research organizations will be in competition with the universities for much the same type of graduate, and this will tend to slow down the progress of the Africanization of the universities.

African Students Overseas

The speed at which Africanization can proceed will depend upon the output of graduates. The Middle African universities have ambitious expansion plans and it will strain national resources to carry them out. But African graduates also emerge from overseas universities; at present there are some 11,000 Middle African students studying in universities abroad. Could not that number be increased with profit to Africa, it may be asked? No doubt as producers of African graduates the Middle African universities must become relatively far more important than overseas universities. Nevertheless, could not the number of Africans working in overseas universities be increased by the offer of more scholarships to undergraduates?

The calculations made in the previous section were based on the assumption that, so far as African students studying overseas were concerned, there would be no increase in their number. Why was this assumption made? It was not because overseas countries have shown any reluctance to take more African students; indeed the United States is disposed towards generous help for them. It is because of the attitude taken by the African states as set out in a resolution adopted at the Tananarive conference. That resolution stated that 'there is a strong feeling in favour of students completing their undergraduate studies in their home countries. It is essential for young Africans to acquire deep enough roots in their own cultural and social environment during their formative years before coming into contact with strong outside influences. However, certain African countries, which do not have institutions of higher education at all, or which have such institu-

tions but not in all fields, or which have institutions which are limited in certain fields, will have to continue sending their undergraduates abroad for as long as necessary. Apart from these special cases it is desirable that outside aid in the form of fellowships for undergraduate study abroad should be transformed into scholarships for study in their home or neighbouring countries.'

These views are not peculiar to Africans; they are widely held by educationists in all countries. There are additional objections to the indiscriminate offer of scholarships to African undergraduates for study overseas. African universities are still small with consequential high overhead costs and a policy which diverts students to other countries and so slows down the growth of African institutions is disadvantageous. Again, overseas scholarships are likely to fall to the abler students to the impoverishment of the student body at home. More generally it can be said that the urgent task is to build up African universities with all speed, for upon them so much depends; universities in other countries cannot be substitutes for home universities.

It is quite otherwise in respect of graduate study. Graduate study overseas can be a most stimulating and memorable experience. For a future university teacher it is of special value; for an African this is markedly the case because African universities are usually isolated, and a university teacher should know something of the academic world outside the confines of the institution where he graduated. A young graduate going overseas usually works for a higher degree or other award, and in this way enlarges his standing and competence. For a potential research worker no more may be needed, but ability to research is only one of the qualifications needed by a would-be university teacher. The latter would benefit much if he were inducted into the university world as seen by the staff; overseas universities would confer much benefit on would-be African teachers if they offered them the opportunity to see the university and its work otherwise than as senior students, as for example by affording them opportunities to undertake some duties such as those of demonstrator, supervisor or tutor to undergraduates. Some African universities award scholarships tenable overseas to young graduates who show promise of becoming teachers; scholarships are also provided from overseas sources for African graduates and more could be made available

with advantage. For young graduates selected by their own universities as potential teachers the special facilities just mentioned would be most appropriate; overseas universities might also have it in mind to keep an eye on all their young African graduate students with the object of discovering potential teachers to whom they could offer special facilities. In short, it is not by offering awards to Africans for undergraduate study that overseas countries can best contribute to a solution of the staffing problem facing African universities; what is needed is more awards for young African graduates coupled with special attention to those among them who show promise of becoming teachers.

Facilities for advanced study overseas would also be of great value to established African university teachers, especially to those who had had some years of teaching. As already mentioned, African universities will suffer from isolation for some years to come, and if the African teachers of middle grade are to be fully equipped to hold chairs and to take charge of departments, they will need to acquaint themselves with recent developments in their special fields, and for this purpose there is no substitute for close personal contact with fellow-workers elsewhere.

There is another side to this picture. We have emphasized the urgent need to build up African universities, and we therefore, deplore schemes which would draw away African undergraduates who could be educated in Africa. But universities need flourishing graduate schools, and if the suggestions just made were carried out, there would be a large flow of young Africans to overseas universities with the consequence that growth of the graduate schools in Africa would be slow. This leads to the paradoxical suggestion that overseas countries would perform a most valuable service to African universities by offering scholarships to their own young graduates for higher study in Africa. Later on we shall say something about the wealth of opportunity for research in many fields which presents itself in Africa. Such scholarships would therefore benefit the holders whose advent would help to build up the graduate schools, and at the same time help to introduce an international element within the student community which is always an advantage.

French Language Universities

It is now time to take up the problem the magnitude of which was assessed in the first section; that is the problem of finding expatriate teachers to fill these teaching posts in Middle African universities for which no locally-born candidates are available. This problem takes one form in those countries, such as the countries of continental Europe, where the universities form part of a national system of education controlled by the central government, and another form where, as in the United States, Great Britain and other Commonwealth countries, the universities, though in some cases financed by the central government, are not controlled by it.

In the first system the universities are under the Ministry of Education, and university teachers have the status of civil servants. There is a uniform scheme for appointments, promotions, salaries, pensions and other rights. The universities make appointments subject to the approval of the state. Though the state does not direct teachers to posts or transfer them from one post to another, it is obviously easy for the state, in collaboration with the universities, to facilitate the acceptance by a teacher of a post in a university overseas. Broadly speaking, all that need be done is to arrange matters so that a teacher, who accepts an overseas appointment, can be sure that he will regain his position at home and will not lose any pension or other rights.

It was in France that advantage was first taken of the possibilities inherent in such a system. A French university teacher must be attached to a faculty if he is to enjoy full rights in such matters as opportunities for promotion. If he is so attached, he can accept an overseas post with the consent of the faculty and subsequently regain his position at home, keeping all his rights unimpaired. He is encouraged to regard the offer of a post abroad with favour because the tenure of an overseas appointment is in general regarded as a valuable experience in a teacher's record. Therefore, so far as teachers attached to a faculty are concerned, no difficulties arise. It was otherwise in respect of those who aspire to become university teachers and who take their first post overseas, or who, after serving in secondary education, take an overseas teaching post. In order to meet their needs a class of teachers overseas was created. Members of this class are within the French

establishment of higher education, and to this class can be appointed teachers serving abroad who fulfil the same requirements for appointment to a faculty as are demanded in France, namely, the possession of a doctorate and a place on the *liste d'aptitude*; the recruitment procedure to this class is that employed at home. These aspirants to the full rank of a university teacher are therefore not at a disadvantage if they serve overseas. Following upon the attainment of independence by the French African territories, various special arrangements were made varying from territory to territory, affecting the appointment of French university teachers to universities in these territories. It is not necessary to describe these arrangements because they do not affect the essential features of the French system under which teachers can accept overseas appointments without surrendering any rights or endangering prospects of careers at home.

About a quarter of the posts in Middle African universities for which expatriate teachers must be found are French-speaking institutions. There is only one country outside the continent of Europe, which is able to provide French-speaking teachers in any number, namely, Canada; in Canada, university organization is akin to that found in the United States and Great Britain, and the problems raised for Canadian university teachers serving overseas have to be considered along with those which are met elsewhere when there is no centrally-controlled university scheme. Apart from France, Belgium and Switzerland, university teachers from continental Europe, if able to teach in a foreign language, are more likely to be able to use English than French, and it is interesting to learn that the authorities in a number of these countries, notably Germany, have recently announced that they are willing to make arrangements under which university teachers, who accept appointments abroad, will have their status safeguarded and their return home secured. This should open up a welcome new source of English-speaking teachers for African universities. Returning to the French-speaking universities in Middle Africa, it is the opinion in French academic circles that, in spite of the large plans for university expansion in France, there is reason to believe that, given the continuance of the present arrangements, the required amount of expatriate help for universities in former French territories can be secured.

English Language Universities

Apart from Liberia and Ethiopia the English language universities of Middle Africa are either in territories which were formerly British or, in the case of the Sudan, in a territory which was under British control. As a basis for a discussion of the problem of securing English-speaking expatriate teachers for their universities, it may be useful to recall their history up to the time when the countries which they serve became independent. University colleges were founded on the model of British university colleges; they were independent, self-governing bodies which appointed their own staff. They differed from universities only by reason of the fact that they had no power to award degrees; the students worked for the degrees of the University of London. This arrangement was made because it would demonstrate to the world at large that academic standards were high. Salaries and conditions of service corresponded closely to those prevailing in Great Britain; except in the case of junior posts, appointments were permanent, that is to say to the age of retirement.

It was intended that standards should be in all respects equivalent to those in British universities, but it was hardly to be expected that many candidates with good qualifications would respond to advertisements issued by a college in a remote place of which few had ever heard, unless special steps were taken. Therefore the British universities set up the Inter-University Council consisting of one representative from each British university; it is financed, as are the universities, from public funds. The Council had no power or control over the colleges; it was set up to help and advise when asked to do so. In particular it offered to issue advertisements of vacant posts at the colleges, to set up selection committees, to interview applicants and to report to the colleges on the merits of candidates. When good candidates did not come forward, the selection committees would endeavour to stimulate more promising applications. The colleges took full advantage of this offer; because the Council had the weight of the British universities behind it, it was able, by its activities, to build up a picture in British academic circles of these new colleges as equivalent in standing to home institutions. The recruitment of teachers was not confined to Great Britain; applicants from other countries were welcomed. But it was not to be expected that ap-

plications from outside Great Britain would be numerous. The colleges were situated in colonies which were a British and not a Commonwealth responsibility; their organization was on the British pattern and their syllabi were drawn up for the benefit of students working for a British degree.

With the coming of independence the situation had been transformed. It is important to grasp in what the transformation consists. The colleges attained university status at about the time of independence; but there was no necessary connection between the two events; it was always intended that the colleges should become universities when they had grown to a certain size and had attained maturity. The transformation is not structural; the constitutions of the institutions remain virtually unchanged apart from the acquisition of degree-granting powers. The transformation is psychological. They have become among the foremost possessions of new national states which repose in them much of their hopes for the future. To academic circles outside Great Britain they no longer figure as British responsibilities; they are seen as members of the international university world which happen at the present time to need help. There is a widespread disposition to provide this help, and we can turn to consider how the help needed in the shape of expatriate teachers can best be provided.

Recruitment of Teachers

The English-speaking countries, whence most of this help must come, all have extensive plans for the development of their own universities. It is estimated that enrolments in United States universities and colleges will double or more in the next fifteen years, that the number of university students in Canada will increase at the rate of 10 per cent per annum between 1960-61 and 1970-71, and that the number of university students in Great Britain will increase by 70 per cent between 1960-61 and 1973-74. There is serious doubt in these countries whether the number of additional teachers can be found if the high standards required of a university teacher are to be maintained. Therefore it will not be easy to find the required number of teachers of the necessary quality for work overseas. It is against this background of general scarcity that the problem of the recruitment of expatriate teachers must be discussed.

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When African universities seek to take advantage of the recent great expansion of the possible field of recruitment of English-speaking teachers they encounter serious difficulties. How are they to make their needs known and how are they to assess the merits of such applicants as may answer advertisements? Advertisements issued by African universities which, because they are recent foundations, are as yet little known outside the countries in which they are situated, are not likely to attract many promising candidates, and there is no way of assessing the paper qualifications of applicants other than sending representatives overseas on time-consuming and expensive journeys. What are needed are channels of communication between African universities and the academic community of each country of possible recruitment. These channels could take the form of national agencies or bodies representing the academic community; it is essential that such agencies should be of high standing and should command the respect and confidence of the universities of the country. An agency would have a secretariat and would act as a repository of knowledge about African universities; it would spread information about African universities, and it would be in a position to inform a potential applicant for an overseas appointment concerning the range of work, the opportunities for research, conditions of living and other relevant matters at the university in question.

An agency would offer to advertise vacancies on behalf of any African university which desired to use its services; it would act much as the Inter-University Council does, that is it would set up selection committees, interview candidates and report its views to the African university in question. If promising candidates were not forthcoming, it would endeavour to encourage well-qualified teachers to apply. A national agency in each English-speaking country would be a great advantage and with such agencies African universities could be in direct communication. The existence of several countries in continental Europe which are possible sources of recruitment of English-speaking teachers creates a difficulty. It might be possible for the Committee on Higher Education and Research of the Council of Europe to undertake to receive notices of vacancies from African universities and to transmit them to the agency in that European country judged most likely to have applicants. It would not be possible for an international

agency to do this work effectively. To be effective an agency must emanate from the academic community which it represents; it must be part of that community, and only if it is such can it command its confidence.

Length of Contract

When channels of communications have been opened, the terms of appointment offered to expatriate teachers come under scrutiny. As already noticed, it was until recently the practice to offer permanent appointments to expatriate teachers in Middle African universities which use English. Offers of this kind are still made; but contracts of limited duration are becoming common. Though permanent appointments provide security, young graduates who have not held a teaching post at home are somewhat reluctant to accept them; they do not wish to spend their whole career abroad; they would like to obtain a teaching post at home in due course, and they fear that for various reasons, loss of touch with colleagues in their field, failure to hear of vacancies or difficulty of presenting themselves for interview, they will not stand as good a chance of selection for a vacancy at home as if they had not gone abroad. Experience shows that this fear has been exaggerated; the average length of tenure of permanent posts by British teachers in Middle African universities has been about five years, those leaving having obtained similar or better appointments at home. Nevertheless, this fear persists; there are young graduates who would make excellent teachers but are unwilling to commit themselves to the possibility of a lifetime career in teaching overseas. As for a teacher holding a permanent post in his own country, he is seldom attracted by the offer of a permanent post overseas which involves the resignation of his present appointment.

In the new situation consequent upon independence there is a tendency for African universities to offer to expatriates contracts of limited duration in place of permanent contracts. The motive behind this policy is the proper desire of African universities that the avenue of promotion for their own nationals should not be blocked by the presence of expatriate teachers holding senior appointments on permanent tenure. The new type of contract does not involve the difficulty, referred to above, which arises from reluctance to accept a possible lifetime commitment. But it brings

problems of its own, some of which are relevant to African universities while others have an impact upon the recruitment of expatriate teachers from overseas countries.

Let us take first the implications of the new type of contract for an African university. The essential need of any university is a teaching staff who will carry the full burden of the duties, teaching and administrative, attaching to their offices, and who have a sufficient knowledge of the university and its surroundings to enable them to play their part in formulating improvements in the programme and laying down long-term plans. They must be committed to the service of the university and have no other loyalty. Even a junior teacher requires some time before he can settle down and play a fully effective role; a senior teacher from whom must come most of the initiative leading to new developments and upon whom rests the responsibility for planning, requires a still longer time before he can pull his full weight. This is so where teachers join a home university; it is far more so when they join an African university, which serves a community concerning whose structure and problems they are probably quite ignorant. All this means that the duration of contracts must be for a sufficient period; no rule can be laid down governing the length of a contract, but it is probably true to say that it should be for no less than five years.

In recent times there has been a most welcome increase in the number of academic visitors from overseas countries to African universities. The visits are for very different periods, a few days, a few weeks or a few months. These visits are most stimulating—to guests as well as hosts; they help to build up relations between the new African universities and the older foundations elsewhere. Those on the shorter visits usually deliver some lectures, and such lectures are welcome as additions to the regular programme. The arrangements under which visits are made differ greatly; some teachers come under short-term contracts, it may be for six months or up to two years. Those who come under short-term contracts undertake to carry out specific teaching duties which form part of the regular programme. There is no hard and fast line between short—and long-term contracts, but there is a difference and it is important. Those who come on short-term contracts can give valuable assistance to the members of the staff

who are on long-term appointments, but they cannot be among those who collectively share the full burden of the teaching programme, administrative responsibility and future planning; they are in a sense still visitors, and a university cannot flourish if any considerable part of its regular programme is in the hands of visitors. It is important to emphasize the adjective 'considerable'; there are arrangements between certain African and certain overseas universities under which lecturers from the latter come in turn to assist in the regular programme of the former; this has special value in that it creates a standing relationship between two universities which become acquainted with each other to their mutual benefit. But it remains true that there is a limit to the amount of the regular programme which can be carried out by such arrangements without repercussions on the effectiveness of a university.

Type of Contract

Let us now consider the impact of a system of contracts of limited duration upon the recruitment of expatriate teachers for Middle African universities who use English. Those who contemplate accepting such a contract will have their future career in mind. They may be young graduates who have not held a teaching appointment at home. For them the view taken by academic circles in their country of the value of African experience is most important; if teaching experience in an African university were regarded as a good mark for an applicant for a post at home to have in his record, they could look to the future with some confidence. In France the value of African experience is recognized, but this is seldom so in other overseas countries. Nevertheless, even if this were not the case, a young teacher, who takes his first post in Africa, knows that during his stay abroad he will be out of sight and mind of his colleagues at home and may in consequence be at a disadvantage when he competes for a post on return home. An arrangement, intended to meet this difficulty, has been made between an African university, the University of Khartoum, and a British university, the University of Reading. On the recommendation of a joint committee representing both universities a young graduate is appointed for five years to a post at the British university; he is at once seconded to the African

university, in which he serves for four years; his fifth year is spent at the British university during which he completes such research as he may have in hand and looks for a post at home. This arrangement could be copied with advantage.

African graduates are now coming forward in larger numbers, and from among them African universities are able to fill an increasing proportion of junior posts. This means that African universities are looking chiefly for expatriates to occupy senior posts, and candidates for such posts must be sought among members of the staffs of overseas universities. Few teachers are likely to be willing to surrender a permanent post at home and accept an appointment of limited duration in another continent. Therefore the hope of African universities must be to obtain expatriate teachers on secondment; this means that leave of absence must be granted for the period and also, if the terms of secondment are to be acceptable to a teacher, that there must be an undertaking to reinstate him at the end of the period with the status and salary that he would have had if he had not been away. Secondment, when it is for so long a period as five years, presents obvious difficulties. The work of the absent member must be carried on either by a substitute on a temporary engagement who may not be easy to find, or by transferring the duties to one or more other members of the staff. The difficulties are greatest when it is a question of secondment from a small department; they are less for a large department when there can be a reallocation of duties. The situation is easier when a university is expanding; if it can be foreseen that in five years' time there will be two senior posts where there is now only one, steps can be taken at once to fill the post held by the member to be seconded who can return in five years' time to occupy the new post.

In part the difficulty of secondment for so long a period as five years comes about because secondment for this length of time is a novelty. Universities have not hitherto been asked to consider such an arrangement and it is always difficult to see how something can be done for the first time. If the difficulties are faced, they may be found to be less formidable than now appears to be the case; there are excellent reasons for asking the universities to face them, having in mind the great benefits which they could confer on African universities if they overcame them.

Salary

It is not only questions about future career prospects which will come to the minds of those who consider an offer of a post overseas, there will be questions relating to salaries and amenities of living. Before independence the colleges situated in British territories looked to Great Britain as the country where they could best hope to recruit staff when local candidates were not available. Since it was sought to attract teachers with qualifications equal to those serving in British universities, salary scales were kept about equal to those ruling in British universities. There was no differentiation between the salaries of expatriates and of the locally-born. The salary was below that found in North America, but was above that which would probably have been instituted if the colleges had been set up by local initiative and staffed wholly by locally-born teachers. There were some departures from this system; a few teachers, whose salaries were paid from outside sources, had higher remuneration, and in some cases local salaries were topped up from such sources. Since independence the situation has become more complicated; some African universities have introduced a superior salary scale for expatriates; and the number of cases in which higher salaries are paid, or local salaries topped up, from outside sources has increased.

Where colleagues having equal status and responsibilities receive different remuneration, the situation is unsatisfactory; it offends against the sense of what is fair. What is in mind is the locally spendable salary; it is that which determines the style of living, and if certain members of the staff can afford a higher style than others of the same grade, there are grounds for uneasiness. It is widely recognized that the situation of some people is such that special expenditure falls upon them and that arrangements can be made to compensate them for such extra expenditure without offending against the sense of what is fair. Thus it is a common practice to make arrangements for parents with dependent children to draw family allowances. This type of special expenditure falls on expatriates and it may be heavy. The principle that children and adolescents are best educated in their own country has been discussed in relation to Africans; it applies also to expatriates. Therefore there is a good case for children's allowances for expatriate parents. So too there is a case for the

payment of passages for home leave, and there are other special expenses which can properly be taken into account when contracts are drawn up without introducing undesirable discrimination between expatriate and locally-born members of the staff.

Even if contracts covered the payment of such allowances it would still remain true that university teachers in certain countries who accepted a contract would be worse off than if they had stayed at home. To meet such cases a suggestion has been made which deserves careful attention. The suggestion is that there should be a uniform salary scale; all teachers in a grade would receive the same locally spendable income; an expatriate teacher, however, would be credited with a sum representing not less than the difference between his local salary and that which he would have received if he retained his position at home. The total sum credited to him would be handed over after completion of his contract. African universities which are prepared to pay more for expatriate teachers could use this procedure; where foreign funds are available for aid to African universities they could be used to provide these credits. Under such a scheme there is equality of spendable income; at the same time an expatriate teacher does not ultimately suffer loss by accepting a contract.

The picture which emerges as a possible solution of the salary problem is therefore remuneration on the basis just described together with allowances for such special expenditure as falls upon expatriates. There must also be provision for maintaining pension rights, insurances and other benefits. Where there is a national system of university education as in continental Europe, it is easy to extend such provision to members serving overseas. Where there is no such system there are many problems to be solved. These problems are of a technical kind; they raise no questions of principle and call for no discussion here. But it is important to realize that these problems must be solved; experience shows that inability to maintain insurance and other benefits on appointment overseas is a serious deterrent to the acceptance of contracts.

Questions will be asked about a number of other matters by those thinking of service abroad. In particular they will want to know about housing and health. Generally speaking the housing provided by African universities for the staff is ample in size and good in quality. Health no longer presents a problem; child-

ren flourish, and adequate medical attention is available. In brief, those who think of service in an African university have no reason to apprehend material discomfort.

Opportunities for Research

It is not enough to make the path smooth for those who go overseas; they must want to tread it. University teachers are perhaps a little slow to realize how awakening and stimulating an experience it can be to work in an African university. Old problems take new shapes, and novel problems present themselves; it is necessary to examine beliefs and practices afresh. Only a dull person could fail to learn much of value. This can be put to potential applicants for overseas posts because it may not occur to them. It will certainly occur to them to ask about conditions affecting academic work. African universities take the same view as universities elsewhere and expect that their teachers will contribute to knowledge, and therefore take steps to ensure that the teaching burden will not be such as to leave teachers with insufficient time to follow their own lines of investigation. As to prospects of investigation a distinction can be drawn between opportunities and facilities for research. In most fields the opportunities are immense; that this is so in the biological sciences and in the professional subjects of law, medicine, veterinary science and agriculture hardly needs stressing. The same holds good for social studies, such as economic, political and social organization, linguistics and archaeology; it has recently been recognized by historians that there is much work in their field which can be profitably undertaken in Africa. In the physical sciences the opportunities are less striking but are not absent, as the contributions made by African universities during the International Geophysical Year have shown. As to facilities it is not generally recognized how greatly they have been expanded in recent years; library holdings are impressive, and microfilm services are available. Laboratory accommodation and apparatus are sufficient for most purposes though there may be some difficulty in obtaining more expensive equipment. There is a shortage of laboratory assistants, but steps have been taken to train local people as technicians.

If it is asked how the situation about an African university can be made known to prospective applicants for posts, the answer

is that this should be one of the functions of the proposed national agencies. These agencies could become repositories of up-to-date information about each African university and could, if they did so, provide the information likely to be sought by those interested, relating to the range of studies, the opportunities and facilities for research, climate, housing, health and other relevant matters.

African Responsibilities

Universities have been established in Middle Africa largely by initiative coming from overseas. They are now well rooted and have become national institutions of which Africans are proud. In common with other universities they prepare young people for entry into the higher professions and educate them to be of service to the community in many ways. Such activities are only a part of the task of universities; their responsibilities extend far beyond care for the younger generation. They safeguard the achievements of past generations and especially the national tradition and culture which they seek to refine and enlarge. In them the national intellectual endeavour is focused; it is largely through its universities that a nation contributes to the worldwide intellectual quest and becomes a member of the international circles which are concerned with things of the mind. There need be no increase in the number of African universities in the near future; they are still small in size and could be greatly expanded and so made capable of admitting those qualified for entrance for some time to come. They have their development plans. These plans involve financial problems which must be solved if the plans are to be carried out, but with these problems we are not concerned. They also have staffing problems, and it is these problems which have been under discussion here.

The attitude taken in this discussion has been that the most appropriate form which the help offered by overseas countries can assume is the finding of candidates for posts for which no suitable Africans are available; this is to respond to the needs of African universities as they express them. This is not the form which overseas help has always taken. International and other agencies have offered to finance large schemes under which the staffing and equipment of a department, a faculty or even the major part of a university, are guaranteed from overseas. No one can doubt that

such schemes have extended the facilities available for educating young Africans in an effective manner. But such schemes, largely devised outside Africa, are no longer necessary in order to make progress; African authorities have their own extensive plans. Moreover the operation of these schemes is hardly fully compatible with the autonomy and self-direction of African universities, especially when they include the selection of teachers by overseas authorities and their remuneration at rates out of scale with local rates. Schemes of this kind may be fully in place for technical institutes and other bodies which have straightforward and limited aims for training in certain skills. But universities have wider aims and far greater responsibilities. These responsibilities must be shouldered by Africans; it is for them to carry out the plans. They have in fact formulated their projects. To further them they need expatriate teachers, and it is by supplying teachers that overseas countries can render their best service to African universities.

ACADEMIC ECOLOGY: ON THE LOCATION OF INSTITUTIONS OF HIGHER EDUCATION

K. L. STRETCH

The Intellectual Significance of University Location

THIS PAPER challenges the recommendation of the Robbins Committee on Higher Education¹ that new universities should be founded in large cities. It contends that such location is neither academically nor socially desirable and that the waste of capital resources entailed will either prejudice the attainment of the very necessary expansion proposed by the Robbins Committee or lead to the lowering of academic standards which the critics of the report fear.

It is unfortunate that the Robbins Report was issued just before Professor Buchanan's analysis of the impact of technology, and of the internal combustion engine in particular, on our physical environment.² The latter document recognizes the widespread determination to enjoy the personal mobility which the motor car provides, a freedom limited to students and other vagabonds in medieval times but now being extended through the privileged classes to the whole community. This craving is as deep-seated as the demand for education; but it can only be achieved if our urban communities are rationally planned. The technical problems are insoluble by *laissez-faire* methods; their solution is incompatible with our shapeless, sprawling Victorian conurbations, on the now ghostly tramlines of which the thoughts of Robbins run.

¹ *Higher Education. Report of the Committee appointed by the Prime Minister under the Chairmanship of Lord Robbins. 1961-63. Cmd. 2154 (London: H.M. Stationery Office, 1963).*

² *Traffic in Towns. A Study of the Long Term Problems of Traffic in Urban Areas. Reports of the Steering Group and Working Group appointed by the Minister of Transport (London: H.M. Stationery Office, 1963).*

The academic, economic and social criteria which should determine the location of universities all point away from the large centres of population, while even the phrase 'in their vicinity' needs reinterpretation in the light of contemporary technology.

A university must be an academic community. It is not just a group of people who assemble from 9 a.m. to 5 p.m. for a limited functional purpose. A more intense pattern of concern and association is essential. This offers the undergraduate the ideal context for pursuing his studies with the support needed for his fullest intellectual development. It also enables him to acquire an understanding of many social problems for which he is about to assume adult responsibility by experience on an assimilable scale and by the opportunity for freely ranging discussion. It provides the graduates with the most efficient means of exchanging ideas and information rapidly and accurately, and for exercising the critical appraisal of individuals and their work on which the maintenance of high standards of academic performance depends. One major attraction of Oxford and Cambridge for scholars is that they facilitate such close contact between all members. If their inordinate pre-eminence is to be modified by emulating rather than destroying their admitted excellence, other universities must offer similar advantages.

While the rate of growth of knowledge makes it impossible for any institution to support an unlimited number of specialities, a large number is necessary to promote the stimulation of differing outlooks and the co-operation of many related disciplines in teaching and research. Large undergraduate schools enable some parts of courses to be handled economically. The reconciliation of these trends with the need to create a body in which each individual recognizes himself as a contributing member, rather than a unit being processed, suggests that the Robbins proposal to aim at a student population tending towards 10,000 gives the right order of size.

Although some degree of isolation is necessary to provide time and the environment in which to think, universities need close contact with independent non-academic persons and institutions to prevent intellectual attainment from degenerating into arrogance or indifference to the interests of other sectors of the society. Sharing shops and pubs, cinemas and transport contributes more

to this vital educational function at the undergraduate level than the cultural facilities stressed by the Robbins Report. The university itself should provide a source or magnet for the latter. If this contact is to be effective, university and town must be interlocked and meet in their daily routines; a campus on which the students find all their normal wants provided by their own special services can be as isolated in a corner of a big city as in a country park.

In addition many fields of study demand information or experience only obtainable in industry, commerce or other professions. Yet as research must be pursued on a deliberate and extended basis, the freedom and speed of movement conferred by the motor car fixes a much greater radius for effective contact in this sphere than in the earlier epochs of academic history. The author's own experience of running an institution dependent on such a network of relationships, albeit in the industrial field, shows that it can conveniently extend over a radius of about 50 miles. Within such an area the half-day visit, which is usually necessary for any exchange which cannot be carried out by telephone or letter, can be easily arranged.

If a university is to be a lively community working constantly at the frontiers of knowledge, a high degree of flexibility in some parts of its accommodation is necessary. Studies, classrooms and living quarters may well serve over centuries, though room for growth in numbers and ability to conform to changes in teaching methods and organization is useful even in these. Laboratories and other working facilities must be capable of radical modification, or rebuilding and extension, as the fields of interest change or expand, and the techniques of investigation develop. Freedom to meet these demands can be most easily achieved by siting where low density development is possible and providing a free dimension at least on one side.

Ample space allows light forms of prefabrication to be used to deal quickly and cheaply with temporary difficulties, without prejudicing better permanent solutions; this cannot be done as readily on circumscribed areas or at high densities. It also permits the exploitation of those fleeting conjunctions of the right men, the resources and the opportunity on which fruitful lines of investigation and outstanding schools are often founded.

If all the conditions which encourage future growth are fully met, there are advantages in siting universities where the students will have constant reminders that they are building on the achievements of their predecessors. Yet tradition must be interpreted comprehensively, areas of significance in industrial and commercial innovation are as valuable as those with ecclesiastical or political significance.

These considerations add up to location in an urban community of such a size and in such a state that close integration can be attained while still retaining freedom to develop.

The Economics of University Location

As the Robbins Committee gives first priority in the aims of a university to the economic value of the skills acquired, and much comment is based on treating such institutions as graduate production lines, in comparing the cost of different solutions one must include charges which represent differences in the efficiency with which they utilize the resources provided for this task. Moreover estimates must be of the total cost, not merely the cost to public funds as Robbins mistakenly assumes. The method of dividing the cost between parents and students, benefactors and patrons, and different forms of taxation is a secondary consideration. The impact on different sectors can and should be modified to maximize the total national investment in education. The solutions must be designed to minimize the total cost.

In comparing the costs of different sites, one must include the cost of transport and the waste of student time if residential accommodation immediately adjacent to the academic facilities is not provided.

- (i) Loss of student time: this is particularly serious in this country, where we cram into three years courses which are spread over much longer periods elsewhere. If academic standards are to be maintained in these conditions and graduates are to obtain liberal educations and develop balanced personalities, a high degree of concentration of resources for the students' benefit is essential. They only have 168 hours in a week and must eat, sleep and relax like other folk. An extra half-hour morning and evening

waiting for and travelling in local transport represents a loss of at least 10 per cent of the student's disposable effort (the figure is conservative for big cities). As the cost of maintaining and educating an undergraduate is of the order of £1,000 p.a., this commits the country to wasting at least £100 p.a. of its expenditure on each student.

- (ii) Transport costs: a figure of £30 p.a. (£1 per week over 30 weeks) is a reasonable average cost of commuting between the central regions of a large city and its residential suburbs.

These two factors give an additional annual charge of the order of £130 p.a. against any proposals for university development, such as home residence or residential areas separate from the main academic facilities, which do not offer the close integration existing at Oxford and Cambridge and planned in the new universities. As such waste can be avoided by a higher investment in land and buildings, to capitalize this by a factor of 10 is conservative; so that in the comparisons of the next section an extra £1,300 per student place (£2,000 could without difficulty be justified) should be added to any arrangement which does not include adjacent residential facilities.

Capital costs (excluding equipment) per student place for two different types of institution (a 'traditional' university and a 'SISTER'³ with a much greater emphasis on postgraduate work and technology) in three different locations, a large city centre, either the suburbs of a city or a medium-sized town, and a small town, have been calculated. The basic standards used for this exercise are outlined in Appendix II; here only those factors are discussed in which siting affects the cost of buildings or services.

- (a) *Land*. The cost of land near the centre of a large city is taken as £100,000 an acre, in the suburbs or a medium-sized town as £10,000 and in a small town and its environs as £1,000. As these figures reflect the cost of creating the intense public services demanded by urban development, the

³ Special Institution for Scientific and Technological Education and Research.

implication of Buchanan is that the cost gradient will become even steeper. The density of development used for buildings in these cases is 2 for academic buildings and residence at 150 per acre in large cities, 1 for academic buildings⁴ and residence at 100 per acre for intermediate sites, and an overall density of 20 per acre for small towns. Residential accommodation in the large city is assumed to be carried on top of other forms of development, so that only half the cost of the land is charged to this element.

- (b) *Building.* The high cost of land in central areas can be partly offset by building high. Yet this solution itself involves steadily increasing cost per square foot of usable area provided, due to increasing structural costs and the need for means of communication more sophisticated than stairs and paths when vertical movement over any height is involved. The former element becomes particularly onerous if the design must accommodate the high floor loadings and large free areas which are needed by many forms of scientific research. The density of development suggested for the highest cost sites will add about 30s. 0d. per sq. ft. to the cost of academic buildings (15s. 0d. for structure, 5s. 0d. for foundations and 10s. 0d. for lifts) and half this figure to residential accommodation; in the intermediate case only the academic buildings have been surcharged, at 10s. 0d. per sq. ft.
- (c) *Services.* When a number of different functions are stacked, one on top of another and side by side in closely packed large buildings, special arrangements must be built in to provide adequate ventilation and insulation from noise or other forms of vibration. The additional cost of these features, which can be obtained by natural separation at lower densities, adds 5s. 0d. per sq. ft. to the cost of academic buildings.
- (d) *Parking.* This must be provided to match the distribution of cars postulated by our economic and social policies, particularly as freedom of movement is even more important in higher education than in most forms of industrial and com-

⁴ gross internal area of buildings

2 = $\frac{\text{gross internal area of buildings}}{\text{area of site}}$

1 = persons per acre.

mercial activity. The latter can often adopt fixed patterns of working, and so offer concentrated loads to public commuting services; in the former the need to catch the last decent train or avoid an hour's wait cannot be allowed to discourage staying on to take an extra reading, to check one more reference, or to finish the casual exchanges which play a vital part in education at this level. The chaos caused by street parking in our cities is an indication that we have no intelligent appreciation of this problem in this country; so American figures of 1 : 1 for academic and senior staff, 1 : 2 for postgraduate students and other staff and 1 : 4 for undergraduate students have been taken as a guide for future planning. One hundred and fifty cars per acre per floor and structural costs of £220 a place for multi-storey parks give a cost of about £330 a car for parking at the highest density.

TABLE I

CAPITAL COST (£/STUDENT PLACE—EXCLUDING EQUIPMENT)

	SISTER <i>facilities</i>	<i>Traditional</i> <i>facilities</i>	<i>Residence</i>
Large city	4,580	2,580	2,210
Medium town	3,400	1,820	1,750
Small town	3,100	1,640	1,680

Table I indicates the capital cost of universities on different sites. If one wishes to compare the cost per student place of academic provision and any level and location of residential accommodation, one must add figures from two appropriate columns, those for residence multiplied by the proportion provided. The following omissions must be remembered and brought into any complete assessment, in addition to the correction for efficiency of utilization mentioned when discussing running costs. The allowance for student communal facilities in the academic buildings

assumes that halls of residence are close enough for their dining rooms to provide all meals and their studies and common rooms to be available throughout the day. If this is not so, if either separate sites are chosen or students are assumed to live at home or in lodgings, additional feeding and communal accommodation will be needed, adding about £100 per student place.

No provision for physical recreation has been included. In the lower density developments it may be tolerable to assume that adequate playing fields can be developed in open areas adjacent to buildings and that the amount of land and special building for this purpose can be treated as negligible. It seems unlikely that the problem of keeping the community healthy can be solved quite so cheaply and easily in a central location.

No correction for any differential in the staffs cost of living or efficiency of working has been made. Yet if staff are to live close enough to the academic centre to make a full contribution to the education of the students and to the research programmes of the university, an allowance must be paid to offset the higher cost of accommodation in central areas, the capital value of which will be about 4 to 5 times the differential noted between student residence in different locations. If this is not done, so that staff have similar travelling problems to the students, a similar waste of time occurs at 2 to 3 times the cost. This loss must be borne either by the staff personally, which must prejudice the quality of recruitment of an institution compared with others that do not saddle themselves with such a burden, as the existence of 'London' allowances shows that staff consider the cultural advantages pressed by Robbins far outweighed by economic disadvantages, or by less effort and time being devoted to the preparation of teaching and the conduct of research, which reduces the quality of the academic life of the establishment.

Economically the case for siting institutions offering full-time education in small towns is quite apparent. Moreover, should filial piety inspire a local Maecenas to subscribe the £10 or £20 million needed to free a new foundation from such limitations (as it contributes much prestige, little to academic function, the difference in cost should not be charged to educational funds), he might well ponder whether the money would reflect greater glory on his patronage if devoted to increasing the academic potential

in land, building standards or equipment of an institution located in the neighbourhood rather than at the centre of his patrimony.

The University and the Local Community

If the country is to use its existing resources efficiently and develop both existing and new centres of population attractively, rational methods of deploying industry and population are essential. The trend towards bigger and more highly integrated production units demands that when an area is saturated, further development in a new area should take the form of moving out entire units, so that both those transplanted and those remaining can continue to grow. Such moves are costly and upsetting; so if they are to be undertaken willingly the institutions and people moving must not feel that they are being exiled to a deprived area. Amenities must be allocated to new towns and development areas as well as displaced persons and industries, if they are to become stable communities. Yet the fashion of allowing that London, as the capital, must have everything encourages provincial centres to join the same clamour at every level, so that the distribution of these features depends on the political leverage of massed votes rather than on any attempt to distribute them in an equitable manner. The deliberate location of universities in less populous areas would provide a positive counterbalance to the tendency for small towns and outlying areas to lose their population, and the big units to expand too much. Universities, which do not themselves need the concentrated public services of a central site and should provide inspiration as well as education for the nation, should not join the crowds swarming into the big cities, but set a lead in encouraging planning on a regional and national, rather than a parochial, scale.

If, however, any university is to contribute to the life of its town and not dominate it, the town must have some functions which are not merely a service to the academic community. A number of independent industries or services provided to the neighbouring areas are needed to offer a range of opportunities for congenial employment and introduce interests which can break up any introvert tendency.

All the factors discussed can now be seen to converge to suggest the ideal situation for founding a new university, or resiting one

being greatly changed or expanded. If the last criterion is to be met, so that town and gown become equal partners, in the final phase of development approximately equal numbers committed to the service of the academic function and to other interests are wanted. It has been estimated that about 4 to 5 persons per student are needed to provide services ancillary to the main academic function, such as clerical, technical and maintenance staffs, the running of canteens and residences, the provision of shops, entertainment and transport. If, therefore, some 40-50,000 are to be closely connected with the life of a university of the size proposed, a community of the order of 100,000 would provide the balance desired.

The 50,000 directly linked must grow with the university itself; yet this does not lead to an existing town with a population of 50,000. If their non-academic interests are to be virile so that they offer young people an effective choice, with the possibility of progressive non-academic careers, they should be initially on a considerably smaller scale, so that the impetus to development in other sectors which the university will provide finds room for some expansion. Otherwise one or both parties will soon hit trouble. Yet a town of the order of 20-50,000 might be selected if some areas and activities in it have been quiescent or receding, thus leaving space for the university to be introduced in their stead.

Preferably one should seek a small town of about 10-20,000 population, situated within about 50 miles of a major industrial area, with some land available stretching right into its centre. There a new university can be developed economically, integrated both in itself and with the town community, and with scope for both to expand to a reasonable size without strangling one another in the process. Such a development would be cheaper, even if 100 per cent residence were provided, particularly if the institution plans to include a high proportion of technological work, than one with residential facilities well below what is educationally desirable in a big city. The close grouping of all those concerned with academic functions and their inter-relationship with the town would provide the stimulus and atmosphere which distinguish a university city. Most conurbations can find suitable small towns which could provide such growth points, even if few will be as convenient as Delft is to Rotterdam. By providing circumstances

which foster the growth of an academic community when trying to force into decades progress achieved elsewhere over centuries, they may then hope to see their foundations challenge Cambridge as effectively as Cambridge has outpaced Oxford.

APPENDIX I

THE ARITHMETIC OF ACADEMIC ECOLOGY

Distribution of Staff and Students

Academic Staff:

For postgraduate work, staff/student ratio of 1 : 5

For undergraduate work, staff/student ratio of 1 : 8

Students:

		SISTER	<i>Traditional</i>
Undergraduate		50%	80%
Postgraduate		50%	20%
Science (including medicine)	(S)	25%	30%
Technology	(T)	50%	10%
Other arts and sciences	(O)	25%	60%

Ancillary Staff:

Administrative staff (Adm.)/academic staff, 1 : 2

Technicians (Tech.)/academic staff in technology and science,
1 : 1

Maintenance staff (Main.)/academic staff, 1 : 2

(a) *Science laboratories.* This is the average U.G.C. figure (50 sq. ft. for undergraduates, 100 sq. ft. for postgraduates, with 35 per cent added for service rooms), scaled at $1\frac{1}{4}$ places per undergraduate student and half the postgraduate allowance for each member of staff. The extra 25 per cent on undergraduate teaching laboratories is to deal with variations in class size, provide some demonstration units, and afford scope for each student to do a project in his final year.

Technological laboratories. This has been scaled at twice the figures for pure science. The nature of technological research varies so widely that this can only be an average value of

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space per worker, not a size of work place. The contention that the allowance is minimal is justified by comparing the allowance for each postgraduate student (270 sq. ft.) with those made in industrial research organizations working in similar fields (which span the 500 to 1,000 bracket) and in technological institutions overseas where this type of research is well established and which aim at about 400.

Accommodation Standards (in sq. ft.)

Academic:

		<i>Under-graduate</i>			<i>Post-graduate</i>			<i>Academic Staff</i>			<i>Ancillary Staff</i>		
		<i>S</i>	<i>T</i>	<i>O</i>	<i>S</i>	<i>T</i>	<i>O</i>	<i>S</i>	<i>T</i>	<i>O</i>	<i>Adm.</i>	<i>Tech.</i>	<i>Main.</i>
Departments:													
Laboratories/Workshops													
	(a)	85	170	33	135	270	33	67	135	—	—	—	200
Drawing offices	(b)	—	2	—	—	—	—	—	—	—	—	—	—
Classrooms	(c)	25	25	25	6	6	6	—	—	—	—	—	—
Studies/offices		—	—	—	50	50	50	120	120	120	120	—	—
Reading rooms	(d)	2	2	2	2	2	2	—	—	—	—	—	—
Communal:													
Lecture theatres	(e)	—	2	—	—	—	—	—	—	—	—	—	—
Assembly/examination		—	2	—	—	2	—	—	5	—	—	—	—
Dining	(f)	—	—	—	—	—	—	—	6	—	—	6	—
Common rooms		—	6	—	—	6	—	—	20	—	—	6	—
Library:		Storage for 1,000,000 books at 60 sq. ft./1,000 books Reading places for 20% of student roll at 25 sq. ft./place											

These figures are converted to gross areas by adding 60 per cent to departmental provision, 50 per cent to communal, 40 per cent to library.

Gross academic area/student: SISTER 440 sq. ft.
Traditional 270 sq. ft.

Residential: The U.G.C. system of 'study bedroom units' with an allowance of about 1.5 units per student place has been converted to 330 sq. ft. (gross) per student (section g below).

Indeed the tightness of the figures used and the growing size and power of the instruments needed should generate strong pressure to locate institutions leaning towards technology in less densely developed areas, where large special units can be conveniently accommodated. If adequate provision is not made, a strong bias is created in favour of the present undesirable trend for applied science to be neglected.

Other laboratories. This term covers such features as laboratory accommodation for social sciences, studios, language laboratories, map and information rooms. The number of disciplines which can be adequately studied from books alone is small.

Workshops. As these will be for maintenance and service work, not production, ample room for dumping and working around assemblies is essential.

- (b) *Drawing offices.* At mean U.G.C. scale (40 sq. ft.) for 10 per cent of the half of the technological undergraduates who should be interested in design. Any dissenter should refer to the Feilden report on Engineering Design,⁵ and note the major contribution of engineering exports to national solvency.
- (c) *Classrooms.* At 20 sq. ft./place with 25 per cent added to cope with wide variations in size of classes and concentration of classes at particular periods to allow alternative regrouping at others. The allowance for postgraduates recognizes the growing importance of formal instruction in such courses.
- (d) Small departmental libraries with standard works of reference appropriate to particular disciplines, with space for 10 per cent students to work up results within reach of checking practical details.
- (e) A range of large lecture theatres economizes staff in earlier years of courses and enables distinguished speakers to reach broad, interdepartmental audiences.
- (f) Students assumed to feed in halls of residence, remainder to be provided for by two sittings for each meal. If halls and

⁵ *Engineering Design. Report of a Committee appointed by the Council for Scientific and Industrial Research to Consider the Present Standing of Mechanical Engineering Design.* Chairman: G. B. R. Feilden, Esq. (London: H.M. Stationery Office, 1963).

academic areas are separate, an extra 6 sq. ft./student for dining and 8 sq. ft. for duplicated communal facilities (20 sq. ft. gross) must be added for each student.

- (g) This does not allow for any academic staff in residence except wardens (at 1 : 50 students), for dining facilities for attached staff, or for any higher scale of accommodation for some postgraduate students.

Staff and Student Conditions

The standards outlined apparently postulate a low utilization of capital resources. This is inevitable if the maximum overall efficiency of the university is to be maintained. Capital provision and operational efficiency are not independent variables which can be maximized separately, nor do analogies drawn from other forms of education give valid standards of comparison. As such exercises are often attempted, some indication of why they are inaccurate is given.

In addition to the need to ensure that false economies do not waste student effort of greater value, as mentioned in the text, there are three aspects of university education which are incompatible with the tight timetable which would be needed to achieve higher utilization. The first is that one of the major objects is to train the student to allocate his own time between different aspects of his life. While guidance must be given, he should have considerable freedom in selecting his own pattern of working. The second is that a university should be able to offer a range of studies which can be varied within quite wide limits to fit individual interests. The varying size and distribution of classes which result make it extremely difficult to fill every classroom seat all the time. Lastly, the pattern of laboratory work does not allow different students to use the same apparatus and space in alternating periods. If such exercises are to train the intellect and yield some understanding of processes, each must think out the approach himself, not merely carry out a series of operations set out for him on a card; he must assemble and calibrate at least some parts himself, not rely on the laboratory technician's assurance. He must detect any mistakes or anomalies, not merely copy a fair set of results from his neighbour. Such exercises will often run over days; during that period the space and apparatus are not

available for others, even when the student concerned is away at other classes, reading in the library, or even getting his preferred form of exercise or relaxation.

The cost of wasting staff time is greater than that of students by a factor of three to four. Moreover, while the outsider tends to think only of the formal contact time as 'teaching', if this is to be of any value the preparation takes much longer and greater effort. This is not just a question of arranging the material for presentation; it involves extensive reading to keep in touch with the work going on throughout the field and intensive pursuit of his own studies. Research is not just a relaxation from the burden of instruction; it is an essential condition of the teacher having the depth of insight and knowledge of his subject necessary to guide advanced students in it. Such preparation cannot be conducted effectively while sitting ready to pop out and lecture to a class because a room has become available; it demands concentration for long periods surrounded by the appropriate references in the library, immersion in the conduct of experimental work in the laboratory, or sitting thinking, calculating and drafting in his study. A timetable which permits such conditions of work cannot achieve the high space utilization possible at lower levels of education.

Fitting the pattern of work involved into the standards suggested will demand the highest quality of design and the greatest care in operational planning. They are much tighter than those enjoyed by existing institutions; particularly as they are overall allowances, not just areas applicable to particular buildings as in U.G.C. practice, where overlapping provision as numbers vary in different faculties gives some extra freedom. These considerations make one hope that sponsors would never attempt to initiate a major new development on land calculated on the bare minimum figures, particularly if the institution hopes to make a major contribution in science and technology. Room to accommodate at least a few of the larger instruments (such as reactors, wind-tunnels), for library expansion, and some left uncommitted to allow future opportunities to be seized, should be provided.

Comparisons with other organizations must be with their research laboratories and staff colleges, not with production lines and apprentice training schools. The technical criteria which determine whether research can be done effectively on any scale are

identical, regardless of whether the motive for conducting the investigation is to make a profit by improving industrial processes or to contribute to man's understanding of the universe. Judged by the appropriate standards the figures are not lavish; unless adequate provision is made the quality of staff and teaching will steadily deteriorate. Why should good men return from industry or America if they are denied the facilities to work well? Avoiding such dangers is particularly important, as the assumptions on staff recruitment are the weakest point in the plans advanced for the expansion of higher education.

Costs

A basic figure of £5/sq. ft. for building and domestic services is used.

Additions to this figure for increased structural costs and services are incurred for laboratories and workshops, which form a considerable proportion of any modern university and a major part of a SISTER. These can easily reach £4/sq. ft. for technology, £2/sq. ft. for science. The exact layout and disciplines involved must be known in making any accurate analysis; for comparative purposes a rough approximation will allow an extra £2/sq. ft. overall for a SISTER, £1/sq. ft. for a traditional university. So in Table I the basic costs (excluding those variations dictated by site considerations mentioned in the text) are £7 for the academic part of a SISTER, £6 for that of a traditional university, £5 for residential accommodation.

Comparison with Robbins

Comparison of these standards and Table I with those given in Appendix IV of the Robbins Report⁶ is made difficult by the fact that the latter gives no indication of how much is attributable to land, to building and to equipment, nor on what undergraduate/postgraduate ratio it is based. For a ratio of 4 : 1, the standards used here applied to single faculties instead of mixed groupings

⁶ *Higher Education. Appendix Four to the Report of the Committee appointed by the Prime Minister under the Chairmanship of Lord Robbins, 1961-63. Administrative, Financial and Economic Aspects of Higher Education.* Cmnd. 2154, IV (London: H.M. Stationery Office, 1963), Annex. F. pp. 154-60.

would give 310 sq. ft./student for science, 480 for technology and 195 for others. These might tally with Robbins' figures if the land and building prices were in the small town/suburban range, although the residual figures for equipment in science and technology, particularly the latter, hardly seem adequate, even allowing for a certain amount being ironmongery rather than precision instruments.

As the extra cost of comparable scales of building in city centres varies from about £1,000 to £2,000 per student place, to locate the majority of new institutions on such sites would add something of the order of £300 million to the £1,420 million estimated. As the country's willingness to pay even the latter sum has yet to be exhibited in any concrete way that shows it realizes that this must be done by diverting funds from other forms of consumer satisfaction, the committee's recommendations on location seem likely to prejudice the expansion it desires.

APPENDIX II

THE ECOLOGICAL PROBLEMS OF REGIONAL COLLEGES

Even with lavish provision of universities, so that every candidate who wants to enter one on leaving his secondary school can do so, a supplementary system of regional colleges offering degree courses of a high standard on a part-time, non-residential basis will be necessary if all citizens are to enjoy the fullest measure of education that they can digest. For some it is needed as a means of recovery from failures on full-time courses. The time spent need not be wasted, demanding that candidates go through the whole process again if society is to recognize their uncertified gains. Facilities for topping up or maintaining contact until transient difficulties have subsided will often be enough to bring the previous efforts to full fruition. Others may deliberately reject a university education at the first opportunity, preferring other methods of gaining experience and knowledge; yet at a later stage may want courses which provide knowledge and intellectual development when maturity in other aspects of their character has been attained through other influences. University graduates themselves may often profit from such facilities; having learnt how to study in

the full-time system, they can well extend and diversify their interests without committing all their time to the process. Such candidates must be offered high quality part-time instruction; and as they must live adjacent to their main jobs, the teaching facilities must be located at centres of communication on a regional basis. They demand and can justify quite different siting from full-time institutions. The scale of communal facilities can obviously be much lower, as social lessons are learnt in the context of their main occupations. The loading on practical facilities can be much higher (Appendix I shows that these are a major element in the capital cost of higher education in science and technology); the students' work at the college can be mainly demonstration of equipment and techniques, which can be tightly timetabled, as further practice to achieve familiarity and the problem-solving exercise which project work provides are obtained through their normal daily experience.

Much confusion and waste has been caused in higher education by failure to recognize the completely different characteristics of these two complementary systems. Because they lead to the same level of qualification it has been assumed that gradual conversion of one to the other through *ad hoc* development of full-time elements within part-time institutions is a satisfactory method of allowing higher education to evolve. Yet this is not so; in education as in other spheres some specialization of function is economically essential. Converting an institution designed and sited for one purpose to quite a different one is an inconvenient and expensive undertaking.

APPENDIX III

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This analysis might appear to concentrate too much on the problems of developed countries, the economies and the earlier stages of the educational systems of which are strong enough to enable a high proportion of their young adults to be endowed with higher education, so that demand is great enough to support insti-

tutions with the specialized functions suggested. Yet such is the drive and enthusiasm for industrialization even in countries still at the very earliest stages that the principles invoked may be of use in planning their systems as well. It is likely that the intense pressure will considerably shorten the time taken by countries now developing to pass through particular stages; so that unless both the pattern of education and the buildings are planned to transform easily into those which will be desirable at a later stage, traditions and structures will be created which will become even more rapidly encumbrances on each country's development than are some nineteenth century legacies on England's.

In the initial phase many countries may not be able to afford different institutions for full-time and part-time study; the shortage of trained staff even more than lack of capital may force them to make one institution discharge both functions and accept some lowering of the quality of courses in the interest of turning out the maximum number of graduates with sufficient training to man their rapidly expanding economies and services. Yet if it is made clear from the start that when the time comes for developing a better articulated system this will be done by splitting units, by building up the part-time services in the centres of population and the full-time ones in smaller neighbouring towns, this exercise may be more easily carried out, as the original units will be physically and psychologically prepared. Having created their economies in an era which knows that rapid means of communication such as telephones and cars exist, there is no need to go through phases appropriate to horses and trams.

The key problem will be recognizing the need to initiate such a move in the capital city. If reforms are carried through early and successfully there, a precedent will be established of great value in preventing the spread of uneconomic solutions throughout the country, as other centres develop and claim recognition. This will demand courage and foresight, as nothing grows faster than vested interests in existing patterns, however temporary they are in theory, nothing is more difficult to exercise by reason than the claims of prestige, national, regional or local. These are not so obviously served by a rational pattern of distributing such august institutions as those of higher education.

PART 3

UNIVERSITY AND THE PUBLIC

THE UNIVERSITIES AND THE PUBLIC IN INDIA

D. D. KARVE

I

IN this essay¹ I propose to deal with some of the ways in which public policy, political practice and public opinion in India affect the functioning of the Indian universities. Before doing so, it will be useful to describe some of the peculiarities of the Indian university system.

II

The first three universities in India, those of Bombay, Madras and Calcutta, were established in 1858 and one can say that higher education in the modern sense has a history of about a hundred years. In most Western countries the word 'university' means generally an institution in which the teachers impart knowledge to the students on both undergraduate and postgraduate levels, carry on research and other learned activity, test the students and award first and higher degrees and diplomas to those who satisfactorily complete their studies. The term 'college' is frequently used in the United States to refer to institutions which teach only undergraduates, which award degrees but which have no postgraduate or professional schools. Sometimes the term is used to refer to specialized technological or scientific institutions which award degrees, such as, for example, 'medical colleges' or 'engineering colleges'. In Oxford and Cambridge a college is a more or less autonomous institution of residence and instruction for students and some mem-

¹ Some parts of this essay deal with aspects of higher education in India, which the author has treated in his "Survey of Higher Education in India", prepared for the Institute of Industrial Relations, University of California, in the spring of 1962.

bers of the staff; it is a constituent part of the university and provides only a limited amount and type of the teaching of its students, much of which is done by the university, which has independent powers of appointment. In some other universities a college may be merely the undergraduate division of the university.

In India, however, both these words have a somewhat different meaning. For a long time, indeed up to about 1915, the universities in India confined their activities to laying down syllabi and courses of study in detail, arranging and conducting examinations of the students and granting degrees and certificates to those who satisfied the examiners. The actual teaching was done in colleges which were affiliated to the universities and which were situated in any part of the large region over which each university had jurisdiction. Because government was almost the sole employer of educated persons in the early stages and in any case the largest employer for a long time after that, only the degrees of the universities which the state had established by statute were recognized. There was thus no chance for non-government collegiate institution functioning independently and granting their own degrees and certificates, as happens in many other countries, particularly in the United States.

Nonetheless, until about 1910 the Indian universities still had no departments or teachers of their own. Calcutta University was the first to make a departure in this direction. Sir Ashutosh Mukerji, who was its Vice-Chancellor, conceived this plan and obtained several large donations to establish chairs in different subjects (e.g., the Palit and the Ghosh professorships, etc.). The central government, which had its seat in Calcutta at that time, and the government of Bengal were also persuaded to provide funds. In the course of a few years Calcutta University had a number of postgraduate departments in which both teaching and research were conducted. The other universities also gradually followed the same pattern of development; thus what were once exclusively 'affiliating' universities became 'affiliating and teaching'. The teaching, however, was confined to the postgraduate level at the seat of the university, while all undergraduate teaching continued to be done at the affiliated colleges. (Much later, a few of the bigger and better colleges also developed postgraduate departments of their own.)

While this development has been taking place, the number of universities has increased from three in 1858 to about 50 in 1961-62. Although a few of them provide for both undergraduate and postgraduate students, the large majority of universities still confine the work of their own departments to postgraduate teaching and research. They leave undergraduate teaching entirely to the affiliated colleges, which are often situated at long distances from the parent university and have little direct or personal contact with it. There are also a few 'unitary and teaching universities' which have no affiliated colleges and resemble the usual type of university in the West. Nonetheless, about 90 per cent of all undergraduate students in India study in about 1,000 affiliated colleges all over the country.

This arrangement has not usually satisfied observers of the Indian university system. Quite early, efforts were made to change it. In 1902 the government of India appointed a commission to review the progress of higher education in the country and to make recommendations for its further development. The main recommendations of this commission were: (1) the universities should assume the teaching functions which were characteristic of universities elsewhere, in addition to recognizing colleges, taking them into affiliation and holding examinations; (2) greater control over the affiliated colleges should be exercised so as to maintain high standards; (3) postgraduate and research departments should be started.

One of the most drastic proposals for reform was put forward by the Calcutta University Commission under the chairmanship of Sir Michael Sadler, which reported in 1917 on the future development of university education in India and of the Calcutta University in particular. It recommended that (1) a number of 'intermediate colleges' should be established, particularly in the smaller towns and cities, where students who had completed their high school course would spend two more years as a preparation for the university degree course proper; (2) the universities should admit students only after they had passed through these intermediate colleges; then they should go through a three year course of studies leading up to the first, i.e., bachelor's degree; (3) new universities should be of the residential and teaching type, i.e., the university should undertake all teaching, both undergraduate

and postgraduate, through teachers directly appointed by it and not through the agency of affiliated colleges.

Whatever may be said about the suitability of the recommendations of the Calcutta University Commission on general or theoretical grounds, they could not be put into practice both on account of financial stringency and because the development of higher education in India had gone too far along old lines for it to be directed into the new pattern. A couple of hundred colleges for the teaching of undergraduates had been started during the 60 years following the establishment of the first three universities; it would have been impossible to down-grade all of them into 'intermediate colleges' and to compel all degree students to migrate to the seats of the universities for their undergraduate studies. The Calcutta University Commission's scheme might perhaps have raised standards of undergraduate instruction, but would have definitely put a brake on the spread of higher education, such as it was. In fact many educationists characterized the intermediate colleges as nothing more than somewhat more advanced secondary schools and they feared that able and well-qualified teachers would not be ready to join them if they never had the prospect of teaching degree classes. The other possibility would have been, of course, to convert every affiliated college into an independent institution granting its own degrees (in fact, to adopt the American system) and to let the degrees be judged on their own merits. Somehow this alternative has never appealed either to the public or to the government. People always wanted a stamp of official recognition²

² At various times during the political movement for liberation, the system of education in India under the British was attacked by political leaders as 'un-Indian' or degrading, and several independent schools, colleges and even universities (e.g., in Poona, Ahmedabad, Calcutta, etc.) were started in order to wean away students from the government-recognized institutions: In no case, however, were these 'national' institutions able to attract significant numbers of students. The main reason for this was the absence of public recognition either by the state or by statutory universities or other authorities. Thus a student who had received his education in a 'national' school could get no employment either in government departments or in educational institutions working under the grant-in-aid code or even in the more important business concerns. He would therefore be forced either to start a small business of his own, which was possible only in a very few cases, or to seek employment in a small business or industry of which also only a very few were in existence.

and there was always the fear that private institutions would lower the standards and give cheap degrees, thus bringing all higher education into contempt. The integrity and impartiality of college teachers and administrators have never been absolutely above suspicion and, since fee receipts were the major source of revenue for them, it was feared that decentralization of the degree-granting authority would result in a lowering of standards simply for the sake of an increased income.

This peculiar system of statutorily recognized universities and their affiliated colleges has therefore remained a special feature of the structure of higher education in India. There have been some advantages. It has made possible a relatively rapid spread of post-secondary education through the readiness to permit new colleges to be formed even in small towns. Local organizations with modest resources could establish colleges, at least in the faculties of Arts, Science, Commerce, etc., and students were thereby enabled to secure degrees from universities which had higher prestige. On the other hand, the academic evaluation of the degrees of a university has, to some extent, suffered because students in all affiliated colleges, old and new, efficient and inefficient, appeared at the same examinations and received the same degrees.

III

The desire for a certificate or degree from a statutorily established and therefore governmentally recognized institution is deeply ingrained in all classes in India. Every public examination, right from the primary school certificate to the Ph.D., has to be conducted by statutory bodies; they are thereby directly or indirectly connected, through the Department of Education, with the authority of the government of the states or the Union. The argument in favour of this system is that if in a state or region there is a single board or university, legally authorized to examine candidates and award degrees and certificates, authenticity is achieved and uniform and comparable judgements can be formed.

The examination system is very carefully organized and it is uniform in pattern throughout practically all of India. The procedure is roughly the following: the university authorities appoint one or more examiners for each subject or for each paper in a subject depending upon the number of candidates and the nature

and number of papers. The examiners draw up a set of questions, which are printed or mimeographed and kept secret until the time of the examination. The set of questions, called the question paper, is handed over to the candidates and they are asked to sit for a definite length of time, usually three hours, under the supervision of an invigilator, and write their answers in the notebook provided by the university. Every precaution is taken to see that they do not cheat.

In order to eliminate any possibility of favouritism based on the candidate's caste, religion, or language, about which there is much contention in public and much apprehension among university authorities, each examinee is given a serial number which he writes on the cover of his answer book for identification. His name does not appear on his examination papers. This is due, firstly, to the fact that some of the examiners are not above suspicion and, secondly, to the need to assure the students and the public that justice is done. The collected answer books are then examined and evaluated by the examiners and in due course the results, i.e., the marks and the class earned by each student, are announced.

With the tremendous increase in the numbers of students in institutions of higher education—now nearly a million—and the relatively small number of universities—about 50—the numbers appearing for the examinations of each university have also become very large. Elaborate administrative arrangements for appointing examiners, for conducting the examinations in dozens of different towns and cities and in several different places in the same city, for seating arrangements, for supervision during the examination, for the printing of the question papers and for keeping them secret, for tabulating and totalling the marks and for declaring the results, have to be made.

This system has many drawbacks. The first and foremost is that teaching in the colleges becomes mechanical and stereotyped. Because students who have studied in many different colleges under many different teachers have to take the same examination, the syllabus for each course ('paper' as it is usually called) has to be drawn up in very great detail. For many 'papers', textbooks are prescribed or sometimes even particular chapters and pages are assigned and examiners and paper-setters receive strict instructions from the university authorities not to go beyond these when draw-

ing up question papers. Even the practical work which students have to carry out for examinations in science subjects has to be laid down in great detail so that students in all affiliated colleges perform the same experiments and, usually, no others. College work is given very little importance and all attention is focused only on the final examination held by an external set of examiners. The teachers must be very careful not to introduce their own individual viewpoints or follow up their own intellectual interests. Very few students go beyond the set syllabus or read any books other than the prescribed textbooks. Indeed, privately produced 'notes' and 'guides', giving 'likely questions' and their answers, and purchasable in the open market, are preferred to the officially prescribed textbooks. Teachers naturally suffer the ill-effects of this set of arrangements and their teaching becomes routine and lifeless. If a teacher went beyond the syllabus or discussed general aspects rather than the particular items prescribed by the board of studies, no student would pay any attention to him, and if he persisted in his 'mad' idea, his classes would soon become empty. This examination system permeates the atmosphere of the universities and colleges in India today, and helps to explain many of their problems. To change it, however, is extremely difficult, not only because of the structure of the universities but because Indian public opinion is so preoccupied with it.

Examinations and the performance of students as announced in the published results have assumed so much importance in the life of the middle class in India that serious consequences follow for the public response towards the universities. It is ordinary practice for the newspapers to print the names or numbers of the successful candidates and sometimes even extra issues are published. It has happened that when the result of a particular examination was rather strict and a larger number of candidates than usual failed, public agitation in the newspapers and on the platform has been known to have taken place as a protest against the 'massacre of the innocents'.

Because of the great importance attributed to the examination results, many ill-prepared students resort to unfair means in the examinations. Occasionally there have been cases of candidates who used physical violence against the supervisors who caught some student using unfair means during the course of an exami-

nation. Every year universities have to appoint investigation committees to look into the cases of students who have copied their neighbour's answers in the examination hall, have smuggled in books or notes, or otherwise infringed on the regulations. Occasionally some, or even many, candidates refuse to answer a paper and create disorderly scenes if they think that a question paper is excessively difficult or out of the ordinary. There have been cases of impersonation of candidates, and of persons outside the hall announcing the answers to the questions on a loudspeaker for the benefit of the candidates inside the examination hall.

It cannot be denied that at least in the early days, when the number of colleges and the number of candidates appearing for the examinations were small, the system ensured uniformity, maintained standards and eliminated partiality. The anonymity of the candidates was desirable in order to prevent favouritism, because the name usually discloses not only the religion and the linguistic region but also, in many cases, the caste of the examinee. There is a general apprehension lest the examiner be influenced by such extra-academic considerations.

The kind of general confidence in the impartiality and integrity of the teacher or examiner, which is almost universal in Western society, is absent in Indian society today and it cannot be said that the academic world in India has succeeded in creating that confidence by their record. Cases of disclosure of questions by examiners to some students, of awarding higher marks to undeserving candidates, etc., have not been unknown, and in the kind of divided society in which we live, the Indian system of examinations has, despite the numerous difficulties which attend it, something to recommend it.

Thus, while the condition of Indian society necessitates the examination system in its present form, it should not be overlooked that it has great defects from the educational point of view. First and foremost is the fact that a student's work in the college during the period of study prior to the examination receives no consideration during the final marking. His marks and class are solely based on his performance in the final examination, which is conducted by examiners who are not his teachers. A number of students neglect their studies during a large part of the year, do no systematic work, and still manage to get passing marks or

even sometimes good marks in the final examination, by intensive study for a few weeks. Then again, written examinations based on a rigid syllabus tend to force the educational process into a very routine pattern. Furthermore, a host of auxiliary evils, such as the guides, notes, model answers to expected questions already referred to and private coaching classes, which are intended to help the student to pass the examination, diminish the possibility of awakening curiosity and stimulating the motivation to gain a deeper understanding of a subject. Of course, the head of the college has, theoretically, the right to refuse permission to a student who has not carried out his work satisfactorily to appear for the final examination, but very few heads exercise that power. Like other deviations from a high standard of educational responsibility, the failure to exercise his power to exclude an unsatisfactorily prepared student may be due either to the pressure exerted on the head of the college by influential persons in the community or by the financial supporters of the college or to a mistaken idea of his duties.

The system of determining marks as a percentage of 100 has been taken directly from the practice common in Britain. But nobody who reads answer books by the score can possibly reach a level of accuracy to within one per cent. Many educationists think that all that an examiner can confidently do is to put each candidate into one of four or five broad categories, like excellent, good, fair, adequate or unsatisfactory, which can be designated by letters from A to E. In India, however, not only are marks on a scale of 100 universally awarded, but in many cases they are used as a complete guide to the evaluation of the calibre of a student. Prizes, scholarships, admissions to engineering and medical colleges—everything is decided on the basis of marks and a difference of one per cent may underlie very important decisions which affect the student's entire future. The general tendency is to regard all examinations, even qualifying examinations, as competitive and all candidates who appear for a certain examination are arranged in an order of merit according to the marks that they secure. In spite of the subjective variations due to different sets of examiners evaluating the answer books of different groups of candidates and many other factors which destroy uniformity, the method persists.

Any suggestion that the judgement of a student's teachers about his work in the college should be given due consideration is opposed on two grounds: (1) loss of uniformity, and (2) possible favouritism. As it is, there is really no uniformity, as the papers of all candidates are not assessed by the same set of examiners. Nobody can reasonably expect that the 50 universities in the country, which conduct scores of examinations, can maintain any kind of uniformity, even though they all recognize each other's examinations and give equivalence to them as a matter of routine practice.

In the case of examinations in science, medicine, engineering, agriculture, etc., there are practical and oral examinations in addition to the written tests, but they are also conducted either exclusively or in association with 'external' examiners, i.e., those who were not the teachers of the candidates concerned. In many cases these practical examinations have also become standardized and mechanical because of the insistence on 'uniformity'. In examinations only those experiments are set for which even the most poorly equipped college has the apparatus or for which a sufficient number of specimens are available. This in turn leads to a neglect on the part of the students of that part of the practical work during their studies which is not likely to be asked in the examination.

The system has gradually developed in such a way that students who really do not deserve to pass actually manage to do so. The minimum requirement for passing, viz., about 35 per cent, is already very low.³ But in addition, the question paper usually offers

³ The broader social and political trends in India are to some extent the cause of the low standards of academic performance. In the old days, students receiving higher education were drawn almost wholly from the upper castes, which had a tradition of learning. In their homes there would be books and newspapers, and political, social and religious questions would be discussed. In the last few decades a rapid expansion at all levels of education has taken place and a large number of students from the lower castes, including the scheduled castes (formerly untouchables), now attend schools and colleges. Their home background is such that they have no tradition of learning. They are often the only persons in their families who are literate and this is proving to be a handicap to them in their competition with their higher caste countrymen.

In my opinion, the rate of expansion of education at all levels has outstripped the supply of properly qualified teachers and the equipment that

to candidates, even in the highest examinations, a wide range of choice in answering questions. Thus if answering six questions is sufficient for getting full marks, ten or more questions are asked and the students can thus avoid those questions, or the questions on those parts of the syllabus, which they are reluctant or unprepared to tackle. A candidate who has not read the whole range of the subject can often select the necessary number of questions bearing only on that part which he has studied and still do well in the examination. Thus the system of examination leads to selective study even at the level of the master's degree. It is then from among these M.A.s and M.Sc.s that the colleges select their lecturers.

IV

In most countries, perhaps with the exception of the U.S.A., universities depend for their work on resources provided by the government. India is no exception to this.⁴ Four universities—Delhi, is needed for the maintenance of proper standards. The salary and conditions of service for teachers were never very attractive and usually only those who were unable to enter other more lucrative professions adopted the teacher's career. But the starting of many new colleges with poor financial resources, inadequate libraries, ill-equipped laboratories and with teachers who barely satisfied the minimum requirements (a second-class master's degree), must bear some of the responsibility for the poor quality of many college graduates.

⁴ In pre-independence days non-government colleges used to receive relatively large amounts as donations and endowments from the rich and even from the upper middle class. This is no longer true. For one thing, the number of institutions has increased considerably and what little charity there is, is distributed over a larger field. Also there has been a change of attitude. As the British Indian government was reluctant to sanction large amounts of money for education, it was thought to be necessary for private persons to come forward with financial help. With an Indian government in power, which is keen on educating Indians, this is no longer thought to be urgent. Finally, tax exemption rules also make it difficult for institutions to receive large donations. The tax exemption applies only to donations of Rs 100,000 or to five per cent of the total income, whichever is less. It is probable that an industrialist who spends money for research, either in his own laboratories or in a laboratory jointly established by him and his colleagues in the same industry, can claim this as a legitimate expenditure on development and thus reduce his profits by that amount. If, however, the same amount is donated to an educational insti-

Aligarh, Banaras and Visva-Bharati—are entirely the financial responsibility of the Centre. All other universities are primarily dependent on the financial support of the states in which they are situated. In addition, the University Grants Commission gives grants to all universities out of the sums placed at its disposal by the Union government. In most Western countries the fact that universities are dependent on the state for financial support has usually no connection with their internal academic policies. Thus the universities in many Western countries, including the state universities in the United States, are not subjected to public pressure in academic matters, except in rare instances. In the matter of admissions, syllabi, standards of examinations, etc., the teachers are, by and large, free to take decisions without reference to the politicians, bureaucrats or representatives of the public.

The general public in Western countries has confidence in the integrity and ability of academic persons, there is also a tradition that internal university affairs are the business of the university staff and their governing bodies are not, except in a very general way, the concern of the public at large. It is accepted by almost everybody that rules about admission of students and policies about the maintenance of standards formulated by university men are intended for the good of society as a whole. In India unfortunately the situation is quite different. In the first place there is

tution and is above the minimum referred to above, it will be taxed. There is thus no incentive in the tax system for Indian businessmen to help the universities. In some instances, industrialists have preferred to establish independent institutions of research in science and technology rather than direct the stream of their charity towards the universities. The Indian Institute of Science was established in 1911 and handsomely endowed by Mr J. N. Tata, the then head of the famous house of Tatas. This institution has now over a dozen different sections ranging from chemical technology to internal combustion engines and from aeronautics to theoretical physics. The Shri Ram Institute at Delhi and a few others are in the same category. These institutions have a loose kind of connection with the universities and some of their professors are recognized as guides for the students working for their Ph.D. degrees.

In recent years, industrialists in India have developed and supported another type of research institute. This is a specialized institute for research in problems pertaining to particular industries. There are institutes for jute (Calcutta), cotton textiles (Ahmedabad), silk and art silk (Bombay), and a few others. These institutions are quite independent of the universities.

nothing like the same confidence in the teachers in universities and colleges, and members of the public think it permissible and even necessary to do everything that they can in order to influence the decisions of academic bodies in various matters. (Of course, it must be regretfully admitted that teachers in universities and colleges have not always behaved in such a way as to inspire the kind of confidence that one finds in the West). Again, in an underdeveloped country, where new hopes and expectations in the minds of people who have had no opportunity for social and economic advancement through education, coupled with the new power obtained through a democratic constitution, the universities and colleges become subject to various kinds of pressures, seldom known in Western countries.

The structure of university government in India lends itself easily to intervention into university affairs by groups and interests beyond the university. It will be helpful therefore to set forth the general outlines of Indian university government.

There is a large deliberative body called the senate or the court, sometimes referred to as 'the supreme governing body' in the incorporating acts, usually with the power to sanction the annual budget and to decide questions of major policy. The executive body which is in charge of day-to-day administration is called the executive council or university council or syndicate. This consists partly of non-academic persons elected by the larger body and partly of the teachers in the university and its affiliated colleges elected by the academic council or the faculties or the boards of studies. In most universities the head of the education department of the state or his representative is an *ex-officio* member of the executive authority. The academic council, consisting of the representatives of the teachers, deals with purely academic matters like syllabi, examination procedures and standards, minimum qualifications of teachers, etc. However, most decisions of the academic council require confirmation by the executive council before they are implemented. There are boards of studies for individual subjects or groups of allied subjects, usually consisting of teachers and experts from outside. The boards of studies are then grouped together in faculties, e.g., Arts, Science, Law, Medicine, Technology, etc., and there is a dean at the head of each faculty.

The senate or court in most Indian universities has representa-

tives of the graduates, of various public associations (e.g., municipalities, local boards, chambers of commerce, labour unions, etc.), of teachers including heads of colleges, of large donors and benefactors. The governor of the state, who is usually *ex-officio* chancellor of all universities in a state, has the right to nominate a certain number of members. Heads of some departments of the state government are also *ex-officio* members. The chancellors have ordinarily no direct connection with the routine administration, but they have the power to decide disputes regarding the interpretation of the act or the rules made under it and can veto certain proposals. The governors of the states, according to the Indian constitution, are 'constitutional' heads of the state and have therefore to follow the advice of the state cabinet in all matters. Thus the state governments get some measure of control over university affairs, but legally the universities are regarded as autonomous bodies.

The vice-chancellor is the chief executive officer of the university and is the chairman of both the executive and academic councils and also of the senate or court. With a few exceptions, the vice-chancellors of all Indian universities are full time salaried officers. They are either appointed by the chancellors or are elected by the senates or courts. In the case of some universities there is provision to restrict the election or appointment to a panel of names prepared by a small committee. Most vice-chancellors are not academic persons but are prominent individuals from other fields like politics, law, business, etc. Under the vice-chancellor is the whole administrative machinery, with a registrar at the top. In some universities, where the vice-chancellor is an honorary officer, there may be a full time rector or pro-vice-chancellor, who deputizes for him and exercises such of his powers as are delegated to him.

The problem of how much authority in the administrative and policy-making fields in a university should be exercised by persons from other fields, i.e., those not directly concerned with education as teachers, has been a subject of discussion in India. Initially of course the universities were dominated to a large extent by non-academic persons including government officials. Even now, though direct control has passed from the hands of government officials, representatives of the public and persons prominent in

other fields do exercise considerable influence through the senate or the syndicate. Teachers have maintained that education is their business and that they should be entrusted with the conduct of the affairs of a university. Non-teachers have countered that as the public foots the bill and also sends its children to the universities, their representatives must have a say in the matter. The dominant interpretation of the constitutions of most universities in India inclines towards the latter view to a large extent. Generally, however, purely academic matters are left to the teachers, but even there, the executive authority has a deciding voice in those cases where financial considerations are involved. Thus the creation of new departments or teaching posts or the expansion of existing departments requires the sanction of bodies which have a substantial non-academic membership.

In such matters as the language to be used in instruction or the raising of entrance requirements to higher education, the non-academic elements in university bodies are in a position to influence the final decisions. The introduction of Hindi and/or the regional language as a language of instruction in place of English or in addition to English in several universities has been generally attributed to the demands made by non-academic members of university bodies.

Thus, although the typical constitution of the Indian university is entirely compatible with the most far-reaching attainment of university autonomy, it also allows for the possibility of decisions which have no good academic grounds and which can in fact be very disruptive of academic work.

The constitutional safeguards of academic autonomy are rather less strong in the affiliated colleges. A very large number of the affiliated colleges are conducted by non-government agencies like caste associations, religious organizations and *ad hoc* bodies formed by educators, philanthropists and local notabilities. Their financial position is usually very straitened although they usually obtain annual and capital grants from governments.

(These 'private colleges' usually teach courses in arts, commerce, humanities and pure science. Colleges teaching technical and professional courses, engineering, agriculture, technology, medicine, are, with rare exception, conducted only by government, because it alone can command the necessary resources.)

Thus both the 'privately' conducted colleges and the governmentally supported colleges and universities are vulnerable to intrusions from outside. Public pressure on universities is exercised, as we have already indicated, from the very moment a new college seeks affiliation. Typically, an association in a small town draws up a scheme for starting a new college and submits it to the university. Usually the scheme suffers from many inadequacies in accommodation, teaching staff, equipment, books in the library, etc. The inquiry committee appointed by the university lays down conditions to be fulfilled by the sponsors of the new college before affiliation will be granted. When the report comes up for consideration before the university bodies, these requirements are often watered down. In some cases permission is granted for the first admission of students even when proper provision has not been made—the date for compliance with the requirements having been postponed. In most states, the final power of affiliation rests with the state government and the university can merely submit its recommendation on the matter. Thus it is possible for influential local people, who may belong to the party in power or may be members of the legislature, to exert pressure on the state Department of Education. One can say without much exaggeration that in many cases the newer colleges, which are deficient in many respects, could not have come into existence without the aid of considerable political pressure originating outside the university.

v

A second concern of external influence is the admission of students into institutions of higher education. Here pressure may be exerted on college authorities, on government and on the universities themselves. In the case of colleges offering arts, science or commerce, the need for exerting pressure usually does not arise. Almost everybody who fulfils the minimum requirements gets admitted, since the number of affiliated colleges is continuously increasing, keeping pace with the growing number of students who complete their secondary education and seek higher education in these branches of study. Except in the case of unitary teaching universities, the admission of students for undergraduate study is dealt with primarily by the authorities conducting affiliated col-

leges, the universities only laying down the minimum qualifications for admission of students. Now, in the case of non-professional and non-technical colleges, these authorities are mostly voluntary local organizations and when and if the need arises, the local people are in a position to influence them. In some instances, the university authorities have to be persuaded to allow colleges to admit more than the permitted number of students; this also usually does not prove to be very difficult because the universities are unlikely to resist.

Public pressure for the admission of students becomes really serious in connection with engineering, medical and other professional courses. This is because everybody recognizes that persons with qualifications in these fields have vastly better economic opportunities and secondly because the number of available places is very much smaller than the number of applicants with the minimum qualifications. Since most of these professional colleges are conducted by government, it is therefore the state Minister of Education who either becomes the target of the pressure from the public or himself formulates admission policies which are not based purely on academic considerations.

In the years just after independence, the heads of these colleges were given considerable latitude in the matter of admission. Gradually, however, the Minister of Education in the state was increasingly pressed, by interested individuals and groups, to intervene in the admission procedure of the colleges.

This pressure must be viewed in the historical context of Indian society. After the advent of the British and the introduction of the Western type of education, the castes and communities which took advantage of the new opportunities were those that already had a tradition of learning and study. These were, generally, the Brahmans, the Kayasthas and a few others. Other castes, with rare exceptions, did not aspire to modern education, nor were the opportunities for them plentiful. In any case at the time of independence the spread of education was very uneven and the state governments, who on account of universal adult suffrage were now under severe pressure from the backward castes and rural populations, tried by various means to make it easy for persons belonging to these groups to gain entrance into institutions of higher education, particularly those offering technical and professional cour-

ses. The number of available places being limited, this naturally resulted in the exclusion of many better qualified students and secured admissions of the less qualified. According to a provision in the Indian constitution, a certain proportion, usually 10 per cent of the places have to be reserved for the 'scheduled castes' (former untouchables) and scheduled tribes (the aborigines). But for the remaining seats the competition was very keen. The educationally advanced castes naturally insisted that all the non-reserved seats be filled on the basis of merit only. The educationally backward castes, however, urged that such a procedure would perpetuate the present state of affairs since the backward castes could not hold their own in competition with those who had a head start over them. The proponents of an extension of the caste-criterion of admission argued that adherence to the principle of merit would militate against the goal of an integrated casteless society.

The governments of some states recognized the importance of educational standards and threw open the non-reserved places to competition by merit, helping the educationally backward castes by stipends, free studentships, etc. Some other state governments, however, named a large number of castes in addition to those recognized by the constitution as backward or very backward and reserved a large number of places in professional colleges for them. This left only a very few places for open competition on the basis of merit. In one state, Mysore, the situation became so blatant that the guardians of some students belonging to the advanced castes, who had been refused admission to a state medical college, in spite of the fact that less qualified students of the backward castes had been admitted, decided to go to the Supreme Court to test the validity of the procedures adopted by the Mysore state. The Supreme Court, in its judgment, declared unconstitutional the procedures adopted by the Mysore state, according to which, in addition to the statutory reservations for the scheduled castes and tribes, further large reservations had been made for castes which the state government had designated to be backward. The state was ordered to admit the wards of the petitioners. This may result, perhaps next year, in the establishment of merit as the criterion for non-reserved places.

The foregoing is one example of public pressure exerted on the affiliated colleges—both governmental and private. Since the col-

leges teach only the courses prescribed by the universities and do not conduct the final examinations, the universities are under pressure with respect to the various matters which fall within their jurisdiction.

The universities lay down, for example, the requirements for admission. It is not unusual therefore to find members of university senates and courts advocating the inclusion of non-academic subjects like drawing, typewriting, music, dancing, homemaking, etc., among the subjects in which a candidate for admission must pass on an equal footing with, say, mathematics, science, languages or history. They insist that any student passing in a certain *number* of subjects without regard to what they are, be admitted to colleges—thus enabling him to by-pass the 'difficult' subjects. Likewise, any attempt to raise the percentage of marks qualifying for entrance (say from 35 per cent which is usually the minimum, to 40 per cent or 45 per cent), is stoutly resisted by all the representatives of the public on university bodies. If in the case of a particular examination the proportion of failing candidates is higher than in the preceding few years, there is a public hue and cry and even examiners become nervous in failing candidates.

It has to be confessed that in these and other similar matters, it is not as if it is the non-academic public alone which exerts the pressure and that the academic world, i.e., the teachers, try their best to resist it. Many of the non-government colleges, founded and conducted by private or semi-public organizations, caste associations, religious groups, etc., even though they receive a small grant from government, are very dependent on the students' fees for most of their income. Therefore not only the non-academic members of their governing bodies and the larger number of contributing members, but the teachers, too, often support the demand for lowering standards of admission, etc. In the case of the affiliating universities, the heads of affiliated colleges and their teachers have a very powerful voice in the academic council and the boards of studies. They are therefore in a position to influence university policy in purely academic matters even more than representatives of the public.

VI

The question of the medium of instruction which has been agitating the mind of the public in India, both academic and non-academic, since independence, provides in microcosm a picture of how various external social and political factors influence matters which are of the utmost importance in higher education. For almost a century after the establishment of the universities in India, English was the medium of instruction in high schools and in higher education. It was also the language of administration in the provinces and at the centre. Educated Indians, who alone possessed in English a means of communication which was current all over India, organized the movement for the liberation of the country. The ordinary people were drawn into this movement, usually by the leaders in each region appealing to them in their regional language. By the end of World War II, the public as well as educationists began to agitate for the replacement of English by the regional languages as media of instruction. As Indians began to acquire more and more influence in the provincial administrations, they were able to get this demand accepted and the regional languages, i.e., the mother tongues of a large majority of the pupils, were adopted as the media of instruction in high schools. At the stage of higher education, however, English continued to be used as the medium of instruction.

The Indian constitution provides that Hindi, written in the Devanagari script, should become the 'official language of the Union', beginning with 1965. Hindi is the language spoken by about 35 to 40 per cent of Indians. (This is according to the 1951 census figures and even those are not very accurate, since in some of the Northern states the census operations were vitiated by various circumstances. The figures about the number of speakers of different languages, according to the 1961 census, are not yet known). The regional languages have acquired a great importance since the reorganization of the states, as all of them have become one-language regions, with perhaps the exception of the Punjab. Most states have decided to adopt, in due course, the regional languages as languages of administration. The Departments of Education, which exercise detailed control over secondary education, had, in several cases, already modified the syllabi of high

schools with a view to reducing the time allotted to English and increasing the importance of Hindi. Gradually the demand that English should not be allowed to remain as the medium of instruction in higher education gathered strength. There was, however, no unanimity about which language was to replace English. The advocates of the regional languages pointed out the soundness of the principle that the mother tongue was the best medium of instruction. The need to bring new thoughts, new science and new technology into the regional languages and thus down to the common man was also emphasized. This, they said, could be done best if the regional languages were made the vehicles of thought at the level of higher education.

The protagonists of Hindi are to a large extent the speakers of Hindi. Their plea about the need to have a common medium of instruction in all Indian universities in order to promote intellectual cooperation, free internal migration of students and teachers and, in general, a feeling of national unity, is weakened by a widespread belief that they are trying to secure an advantage by their advocacy of Hindi. Of course, there are a few Hindi enthusiasts even in the non-Hindi regions of India, but their chief objective is the use of Hindi as the official language of the Union. Very few non-Hindi speakers are in favour of Hindi being used as the language of instruction in colleges and universities all over India.

Both the proponents of Hindi and the regional languages have been exerting great pressure in the state legislatures, university courts and senates and in parliament on the Ministry of Education, etc. It appears from recent events that the regional languages are winning, mainly because education is a state subject under the Indian constitution and, with only four exceptions, the universities are financed in large part from state funds. Many universities have now permitted students to answer papers in their examinations in the regional languages. Undergraduate classes in many colleges, particularly in small towns, and even postgraduate classes in some universities are now being conducted through the regional languages, though the latter is confined mostly to courses in arts subjects. Even the Union Ministry of Education has apparently succumbed to the pressure from all sides and the Minister recently made an announcement that universities were expected to change over from English to the regional languages as media of instruc-

tion, at least in the undergraduate courses, by the end of the third five year plan (March 1966).

In their present state of development, none of the Indian languages is really in a position to replace English efficiently as a medium of instruction because of the absence of suitable books and of the terminology for teaching many of the subjects. The rising tempo of industrialization, which is the consequence of the five year plans, has already increased the inter-state migration of administrators, scientists, technologists, industrialists and business people. Their children will encounter great difficulties if each region uses its language for higher education. Also, communication between specialists trained in different regions will become extremely difficult.

In August and September of 1961, there were two conferences on national integration in New Delhi, one confined to the Chief Ministers of states and the other to which political and other leaders were invited. They both recognized the disadvantages of the replacement of English by the regional languages as the media of instruction in higher education. Such a change would have deleterious effects on the maintenance of academic standards, and also on national unity. They, however, did not draw a logical conclusion; they failed to recommend the continuance of English at least until it could be replaced by another *all-India* medium. The following passage from the statement issued after the Chief Ministers' Conference is of some interest in this connection:

'The question of the medium for university education was discussed at length. The tendency of regional languages to become the media for university education, though desirable in many ways, may well lead to the isolation of such universities from the rest of India unless there is a link in the shape of an all-India language. Teachers and students will not be able to migrate easily from one university to another, and the cause of education will suffer for lack of a common link between universities in different linguistic areas.

'The importance of such a common linguistic link between universities was emphasized. Such a common link can only be English or Hindi. . . . The change-over to Hindi and generally to a regional language as a medium of education will only be effective when such languages had adequately developed for the purpose of modern education, and especially for scientific and technical subjects.'⁵

⁵ *The Times of India*, 13 August, 1961.

The rather illogical and ambiguous wording ('the change-over to Hindi and *generally* to a regional language'—my emphasis) of this part of the statement goes to show how even Chief Ministers are subject to pressure from their regions and have to modify their attitudes. It is obvious that the knowledge of a *link* language is not going to solve the problem of migration of students and teachers, if regional languages are to be used as languages of instruction. A student from, say, Bengal, who wishes to, or has to, study in the Madras university will not be able to do so because instruction will be in Tamil and not in Bengali, his language, even though he can communicate privately with his teachers in the 'link' language—English or Hindi.

Meanwhile, in consequence of the passionate political agitation about the question of the proper medium of instruction, the Indian college and university student is being less well educated than would be possible under more favourable circumstances. The rapid expansion of secondary and higher education in the post-independence era has been accompanied by a general lowering of standards. This was most noticeable in the case of the proficiency in English which has been aggravated by the deliberate policy followed by many states to curtail the time devoted to the study of English. This was based on the expectation that English would soon lose its importance. The students who completed their high school course and came up to the universities and colleges thus had a very poor knowledge of English and found it difficult to understand the lectures delivered in English, to read books in English or to answer their examination papers in that language. Also it should be remembered that, generally speaking, most Indians are deeply attached to their language and that all-India loyalties have not yet taken deep roots. Therefore when the students in colleges and universities began to feel the difficulties in the use of English as the language of instruction, the demand began to be voiced for the replacement of English by the regional languages. Some universities, particularly in areas which are linguistically more homogeneous, have already yielded to these demands to some extent by adopting the regional languages as optional media of instruction during the last few years. In the larger colleges, especially in cities with mixed populations, parallel classes are held, one in which English is used and the other in which the regional language

age is used. In the smaller colleges, and particularly in towns with a relatively homogeneous population of local students, only the regional language tends to be used. However, for various reasons English continues to be the sole medium of instruction in the faculties of Science, Technology, Medicine, Agriculture and Law. In the first place, colleges teaching these subjects have students from many language areas and so no regional language could replace English, which is known by a larger number of students than any other single language. Secondly, none of the regional languages has the textbooks and the technical terminology to serve as an efficient language of instruction for these subjects. And thirdly, the teachers would find it difficult to use a regional language because they are accustomed to use English and have never used any other language.

So much emotion and sentiment for the regional language and for 'Indian' as opposed to 'foreign' things has been introduced into these discussions, even in academic circles, that it is difficult to have the subject considered in a calm and dispassionate manner. The Hindi speakers, because they form the largest single group, and because the constitution already gives the status of the official language of the Union to Hindi, are impatient at the delay and want to replace English by Hindi here and now in all fields of all-India activity. They envisage that English will be studied in India only by those who wish to specialize in it or by those who may have occasion to use it in their business or careers.

For over a century English has been studied in the universities and not just as a compulsory subject in all classes. Emphasis has been laid on English literature, classical authors and literary trends. In the new scheme, it will be necessary to change all that and to learn English as a language, as an instrument of communication and for the acquisition of modern knowledge, as a unifier of the modern world. The Central Institute of English, established by the central government at Hyderabad, is doing very good work in this field by evolving new methods of teaching English and by training high school teachers. Leaders in many fields have realized the value of English as the language of a large part of the civilized world and there has been a swing of the pendulum in favour of English in the last three or four years.

The present position can be summarized as follows: all univer-

sities and colleges affiliated to them still use English as the language of instruction, though in a small number of institutions or in some subjects, the regional language is allowed as an optional medium. In the faculties of Law, Medicine, Technology and Agriculture, English is the medium used in all universities. The federal institutions for teaching and research in medicine, technology, engineering, pure and applied science, though necessarily located in one of the states, will continue to use English until at some future date it becomes possible to replace it by Hindi, because they cannot use any of the regional languages. For this, two things will be necessary. One is that a terminology must be developed. The present trend is to use English terms and not attempt to develop new terms at all. A vast number of books in all subjects and at all levels will have to be produced and teachers must become familiar with them. Secondly, all teachers and students in all parts of the country will have to acquire a knowledge of Hindi so that they can use it with facility. This may take many years, particularly because the country can ill afford to spare the services of experts for this purpose at the present time. The effect of the replacement of English by Hindi, or the regional languages, on standards and on intellectual co-operation between universities has been increasingly realized in recent years by many leaders, though the chauvinists in the states, both Hindi and non-Hindi, are exerting political pressure for doing away with English, and some people who know better are reluctant to say what they really believe. It is possible that the gap between what the leaders say in public and what they actually do or mean may widen out of fear of running foul of chauvinists and demagogues.

It is clear that the medium of instruction in higher education is an academic question and is intimately connected with the availability of books, the existence of an adequate technical terminology, the effects on the recruitment of teachers and the migration of students, etc. Governments and legislatures are paying very little attention to these aspects of the matter and it is sad to see that university bodies do very little better. Such arguments as 'English is a foreign language and must therefore be replaced' find great favour with the politicians and the public. The real danger of the isolation of the universities in one region from those in the others which, from the point of view of intellectual activity,

would do great damage to the progress of the country, leaves no impact on the emotion-charged atmosphere.

VII

Of course, universities, even if they are supported by private endowment, must be responsive to the needs of their society. This however is something quite different from the intervention of politicians, governments and public opinion in matters which are properly academic. There is general agreement, throughout the university world, that in academic matters like admissions, courses of study, standards of achievement, etc., the voice of the teachers should prevail. The line is sometimes difficult to draw when it is a matter of deciding how much emphasis should be placed on one subject or set of subjects, such as the natural sciences, in contrast with other subjects. But there, too, a resolution is possible in an atmosphere of mutual trust and respect between the public and the academic community. In India the problem becomes much more complicated. In the first place Indian society is divided by castes and by languages. The peculiar system of affiliating universities and colleges possessing very diverse resources, coupled with the new urge of the lower castes and rural populations to improve their prospects by securing access to higher education, and the inadequate resources that colleges and universities have to work with, all combine to create a situation where institutions of higher education offer great temptations to public opinion. One more factor in the situation is that teachers in colleges and universities in India do not as yet feel themselves to be members of a single intellectual community and have yet to absorb the traditions of modern science, scholarship and higher learning. Their loyalties are still anchored in the social group to which they belong by birth; the academic community itself has been prevented from coming into being by the divided nature of Indian society. Under these circumstances it looks as if it will be some time before institutions of higher education in India acquire and deserve the prestige and reputation which many of their counterparts in the West enjoy.

UNIVERSITIES, POLITICS AND PUBLIC OPINION IN CEYLON

RALPH PIERIS

The Beginnings of Modern Higher Education in the Nineteenth Century

THE problems of university education which beset Ceylon today derive in large measure from historical antecedents. The extent to which provision was made for higher education under British rule was determined by vocational and political considerations; it was also dependent on the colony's financial resources. In the early decades of the last century three schools, established by the government to educate the sons of the chiefs, were deemed sufficient to supply English-speaking officers for the various government departments.¹ The creation of a university was not envisaged at that stage; the need for higher education was satisfied by sending a select number of youths to England. The first British Governor, Lord North, proposed to send two youths from the state schools every year so that after eight years of study in one of the ancient British universities, they could receive episcopal ordination. This was begun in 1811, when two sons of Sinhalese chiefs were sent to Oxford and Cambridge respectively.² The scholars sent

¹ Gratiaen, L. J., *Government Schools in Ceylon, 1798-1832* (Colombo: Ceylon Government Press, 1929).

² J. H. de Saram was at Exeter College, Oxford, matriculated at 21 and received the M.A. in 1820. He is described as "4th Maha Mudaliyar". His cousin, Balthazar de Saram, was fellow commoner at Trinity Hall, Cambridge, and matriculated in 1816. He found it more difficult to adapt himself to English conditions than his kinsman, who returned to Ceylon with an English wife and in a letter to Lord Bathurst, written in 1820, says: "Grown up in all the peculiarities of a native I found myself thrown into a new element on leaving my country, and to emerge from my native habits cost me no small portion of my time after I had arrived in this country." Colonial Office Records cited by Pieris, P. E., *Sinhalese Families*, Vol. V (Colombo: Colombo Apothecaries Co., 1911).

to Britain between 1812 and 1834 were specifically to be ordained as Christian ministers. (Thereafter this arrangement appears to have been discontinued). It was hoped thereby to form the nucleus of a class 'attached to their country by birth, and to England by education'.³ Thus, one major objective of the system of education established in the early decades of British rule was the creation of an English-speaking, Christian class from whose ranks personnel for the public services and positions of authority could be recruited. It was thought that 'a body of men, respectable from superior education and property, is absolutely necessary as a means of good government'.⁴

Yet, Sir Edward Barnes, who was Governor from 1824 to 1831, considered the proposal by the Colebrooke Commissioners for the gradual recruitment of natives to offices held by Europeans to be 'ludicrous in view of their lack of Western education' and he did not wish to change the situation. 'My opinion is that the line is now well defined, that the natives are perfectly content, and that it ought not to be invaded.'⁵ During this period the higher administrators and higher technical cadres, not to mention the planters and entrepreneurs, came from England and only the clerical and lower grades of the administration, teachers for the English language schools and minor government functionaries were recruited locally. There was little thought of preparing the subjects to take any responsibility for the government of Ceylon.

The well-defined line dividing the colonial rulers from their subjects which Governor Barnes wished to stabilize, could not, however, be maintained as the century went on. The current of liberal ideas in England was reflected in official attitudes towards the colonial peoples. Inspired by the writings of Adam Smith and Bentham and the ideals of the Reform Act of 1832, the Colebrooke Commissioners, who reported in that year, were convinced that British institutions should be transplanted to the

³ North to Dundas, 13 March, 1801. Public Record Office, London, C.O. 54/5.

⁴ *Colombo Journal*, 11 January, 1832. This newspaper was the only one of its time; it was sponsored and published by the government.

⁵ Answers of Sir Edward Barnes to the questions addressed to him by the Colebrooke Commissioners, 10 September, 1830. Public Record Office, London, C.O. 54/112.

colony and that its feudal, caste-ridden society should be modernized. Their report stated that the existing Sinhalese and Tamil schools 'did not give an education sufficient for contemporary needs'. They recommended that 'a competent knowledge of the English language should be required in the principal native functionaries'. This recommendation compelled the government to make English education more freely available.

After fifty years of inaction and even resistance the government established the Colombo Academy in 1835, 'to impart some kind of higher education'. This policy of providing higher education through secondary schools—'something on which the government tumbled in a somewhat accidental fashion'⁶—was followed throughout the last century. For there appeared to be no reason to raise the educational ceiling provided by the secondary school system, which had been established largely through missionary initiative as ancillary to the task of converting the heathen, and which was supported financially by the government largely because these 'colleges' turned out personnel for the government service.

By the turn of the last century—a hundred years after the inception of British rule—the country was generously provided with government and state-aided secondary schools. The latter, mostly founded and run by Christian missionary bodies, were known as 'colleges'⁷ because they provided post-matriculation courses leading to university degrees, or at least to the intermediate examination which was considered superior to the senior school-leaving certificate as a qualification for white collar employment. The leading government school, the Colombo Academy, was popularly known as Queen's College when it was affiliated to Calcutta University

⁶ J. Harward, quoted in Chandrasegaram, P., *Policies regarding Higher Education in Ceylon during the Nineteenth and Twentieth Centuries, with Special Reference to the Establishment of the University of Ceylon*, M.A. Thesis, London University, 1961.

⁷ St. Thomas' College, Mount Lavinia (1851), and Trinity College, Kandy (1857), were founded by the Anglican missionaries; Jaffna Cantral (1870) and St. John's, Panadura (1891), by the Church Missionary Society; Jaffna College (1872) by the American Mission; Wesley College (1874) by the Methodists. St. Joseph's College, Colombo (1892), was the centre of higher learning for the Roman Catholics, while the chief of the Buddhist Theosophical Society schools was Ananda College founded in 1895. There were numerous Hindu schools in Jaffna.

in 1859.⁸ It was renamed Royal College in 1881 and was the first educational institution to inaugurate some form of modern university education, being the leading 'college' to prepare students for examinations for London University external degrees, although few of its early students proceeded beyond the intermediate examination. Missionary opinion was critical of the 'unsectarian' liberal education imparted in the Academy but pressure to close it was ignored when it was pointed out that it was easier for non-Christian boys to gain admission to this government school than to the state-aided missionary schools.

The products of the numerous 'colleges' established in the latter half of the nineteenth century supplied English-speaking officers for the various government departments and the commercial establishments, the possession of a school examination certificate being a requirement for employment. For this purpose a ready-made examination system was provided by the British universities; the junior and senior secondary school examinations were conducted by Cambridge University from 1880 until the Second World War, while London University examinations, which were first held in 1881, enabled ambitious youths to take university degrees without ever entering a university and they continued to be popular until they were discontinued by the Department of Education recently.

The New Educated Class

The number of students availing themselves of college education was negligible. The average attendance at Queen's College between 1861 and 1867 was six; the annual expenditure on these students amounted only to about £800-900. Until quite late in the nineteenth century, the number of English-educated Ceylonese remained very small and as late as 1901 only 2 per cent of the population was literate in English. The distinguished orientalist politician James D'Alwis mentions in his memoirs published in 1878⁹ 'how weak our ranks were in intelligence and learning', and

⁸ Within five years one student obtained the bachelor's degree. The "failed B.A.s" were numerous. Other state-aided schools followed the example of Queen's College and were affiliated to Madras or Calcutta Universities.

⁹ D'Alwis, James, *Memoirs* (Colombo, 1878: reprinted Ceylon Observer Press, 1939).

estimated that not more than 50 Sinhalese could write to the English newspapers in his day, or cared to do so if they could. This elite contrived to evolve a *modus vivendi* appropriate to their age by an unselfconscious acceptance of Westernization, while retaining a considerable part of their own culture. The poise they maintained was possible in their position as a non-commercial middle class dependent on landed interests¹⁰ and on professions such as law and Western medicine.

By the middle of the last century Victorian society had its indigenous counterpart in Ceylon and the English-educated, in outlook and style of life, had gone far on the path of Westernization, as demonstrated in the newspapers, the balls given by well-to-do families, the clubs, games, race meetings, dog carts, morning coats, evening dress and top hats, the whiskered males and corseted females in Western attire.¹¹ Alongside them were two other sectors of the educated population. First, there were the hundred times as many better educated Sinhalese, unacquainted with English. According to James D'Alwis, they were from 'the middle and lower orders' and owned no landed property. In contrast to the English-educated elite in the professions and in the public service, this vernacular-educated class was relegated to traditional professions such as Ayurvedic medicine and astrology, the less esteemed posts in the public service requiring no knowledge of English, such

¹⁰ James D'Alwis had no substantial income from land but he had little difficulty in finding jobs to make ends meet—in a newspaper office, as interpreter in the law courts, and as house appraiser—before he qualified as a lawyer.

¹¹ The conspicuous consumption of the elite in the second half of the last century is documented in the diaries of men like James D'Alwis, E. R. Gooneratne and J. A. Dunuwila. They were by no means alienated from Sinhalese culture, although their style of life was Western. Gooneratne was frequently visited by Buddhist monks and attended temple ceremonies. He has left accounts of the champagne-and-turkey dinners, dancing and card-playing at the houses of his friends, including his kinsman the distinguished Oriental scholar Alwis, who wore the native cloth over the Western trousers in the fashion of the day. Dunuwila, a flourishing lawyer in Kandy, retained contact with his relatives in his village of origin but was a devout Christian.

D'Alwis, James, *Memoirs, op. cit.* Gooneratne's *Diary*, edited by P. E. Pieris, is printed in the series *Sinhalese Families* (Colombo: Colombo Apothecaries Co., no date). Dunuwila's diary has not been published.

as peons, orderlies, hospital attendants and dispensers, and to retail trade. Second, there was a rapidly increasing stratum of persons with a modern Western education but who had not received as much education as the professional and public service elite.

Already an official report of 1862 pointed to the existence of 'a class of shallow, conceited, half-educated youths, who have learned nothing but to look back with contempt upon the condition in which they were born, and from which they conceive that their education has raised them, and who desert the ranks of the industrious classes to become idle, discontented hangers-on of the courts and public offices'.¹² This same writer was indeed appalled by what he called the 'loaferdom and hangeronism' characteristic of the English-educated youth of his day, 'the conceited, hypocritical, petitioning,¹³ honest-work-despising animal, with whom it is not too much to say our English schools have been flooded of late years'.¹⁴

Thus, by 1860 the English-educated population had already become differentiated into two sectors. The elite was a relatively exclusive circle distinguished in education, occupation, income and wealth and in style of life from the other sects which formed a sort of middle or lower middle class. The modern-educated section of the middle class included clerical and other non-manual employees in government and mercantile establishments, the majority of teachers in English schools, and others who, on account of their occupation and meagre incomes,¹⁵ had no prospect of living like 'gentlemen'. As Governor Campbell officially reported as early as 1844: 'Every day the natives of all classes are assimilating more and more European habits and views, and in some cases becoming more qualified to mix in society with Europeans

¹² Sendall, W. J., in his 'Reports' appended to the *Report of the Central School Commission* (1862).

¹³ Many unemployed youths took up the curious occupation of 'petition drawer' drafting letters, applications and petitions in English for submission to government offices and law courts, for clients who were illiterate in the language of the administration.

¹⁴ Legislative Council, Sessional Paper VII—1867.

¹⁵ When clerical salaries were revised in 1864 they ranged from Rs 600 to Rs 4,000 per annum, the 'special class' earning more than Rs 3,000. The salaries of the 'Civil List' officials were, on the average, five or six times higher.

—but at present an almost impassable barrier is drawn which cuts off a clerk from promotion to any of the higher offices'.¹⁶

The prosperity of the colony during the 'coffee mania' of the forties enabled the government to extend English education, but the danger of expanding the numbers of the educated beyond the assimilative capacity of the economy was already evident in 1833, when the Secretary of State warned the Governor of the need to diminish 'the present excessive number of clerks in the public offices'.¹⁷ The expansion of education which accompanied the coffee boom was halted in 1848 by the financial depression which followed the slump in the world coffee market. By the middle of the century the official position had become restrictionist in its attitude towards opportunity for English education. 'English education has been extended as far as there was a legitimate demand for it . . . leaving the government free, while it merely provides for the efficiency of the present educational establishments, to direct its efforts to the extension of education in the vernacular language of the natives'.¹⁸

For these reasons the government continued to depend on overseas institutions to meet its needs for higher education. The practice of sending students for training at the Bengal Medical School in Calcutta continued. (The first batch of four students joined the medical service in 1843 after four years' study in India). It was only in 1870, as a result of an official report by the Colonial Surgeon in the previous year which drew attention to the depopulation of certain remote districts and pointed to the need for qualified medical practitioners 'to displace the present class of ignorant quacks', that a medical college was eventually opened as an 'elementary school' for instruction in medicine, surgery and midwifery. In 1889 the Medical College was recognized by the General Medical Council of the United Kingdom as an institution authorized to confer diplomas in medicine and surgery, and holders of its

¹⁶ Governor Campbell to Lord Stanley, 22 February, 1844. Ceylon Government Archives, 5/31.

¹⁷ Despatch of Lord Goderich, 23 March, 1833. Public Record Office, London, C.O. 54/24.

¹⁸ Barrow, George, *Ceylon Past and Present* (London: John Murray, 1857).

licence were registered in the Colonial Medical List. A Council of Legal Education had already been set up by the government in 1873 to direct professional training of lawyers and the Ceylon Law College was founded in 1887.

Ceylonese Demand for Higher Education

Meanwhile, in contrast with the government's policy of restricting education in English secondary schools and delaying the establishment of a local university, indigenous private initiative was responsible for a movement for the establishment of a university as well as the extension of secondary education. The initiative of the Protestant Christian denominations in founding English 'colleges' in the leading towns roused the Hindus and Buddhists to emulate them. Among the principal objectives of the Buddhist Theosophical Society, founded in 1880, was the promotion of Buddhist education and the maintenance of schools, the provision of higher education in English to Buddhists at comparatively small expense, to break the domination of English education by Christian missionary bodies, and to keep Buddhists abreast of modern knowledge through the medium of English. Ananda College, the leading Buddhist school, opened in 1895,¹⁹ and Jaffna Hindu College, which was founded in 1890, was the principal Hindu institution of higher learning.²⁰ The Roman Catholic orders founded their own colleges after the government decided that schools of

¹⁹ Other Buddhist schools included Nalanda College and the girl's school Visaka Vidyalaya in Colombo, and Dharmaraja in Kandy. Besides, two centres of Buddhist learning, Vidyodaya and Vidyalandara Pirivenas, were established. Vidyodaya, founded in 1873, had 166 clerical and 36 lay pupils in 1905 and the subjects taught were Pali, Sanskrit, Sinhalese and Arithmetic. In the latter year the first principal of the institution, the Venerable Hikkaduve Sri Sumangala, declared that Vidyodaya Oriental College, as it was then known, was 'an unsectarian institution and the tuition is absolutely free to all irrespective of creed, colour and caste'. There were pupils from Burma, Cambodia, India, Japan and Siam. The progress of students was tested annually by government examinations but the successful lay candidates did not compete for the occupations sought after by the products of the other 'colleges'.

²⁰ For details, see Chandrasegaram, P., *Policies regarding Higher Education in Ceylon during the Nineteenth and Twentieth Centuries, with Special Reference to the Establishment of the University of Ceylon*, M.A. Thesis, London University, 1961.

all religious denominations were eligible for grants.²¹ The spread of English education was a response to indigenous demand and could not be suppressed by the government, which was under pressure from the educated public to disburse grants to these new colleges.

In 1870, P. Coomaraswami, one of the unofficial Ceylonese members appointed to the Legislative Council, proposed that a committee be appointed to review the state of higher education in Ceylon. The proposer and another Ceylonese member served on the sub-committee of the Legislative Council which reported that higher education was very necessary since 'it was through superior education that a class of men fit to impart even primary education could be made available'. The sub-committee voiced the doubts of the educated Ceylonese as to the wisdom of affiliation to Indian universities, and recommended that affiliation of colleges with Calcutta University should be discontinued. They proposed that the government award scholarships for higher education in England.²² With this, the policy of connecting education, particularly at the university level, with English universities became firmly established. British university examinations set standards at every stage of secondary school education. In the nineties London University external examinations were welcomed by parents who could not afford to send their sons to England for higher education. The Director of Public Instruction reported in 1903 that through London University external examination 'it becomes possible for Ceylon youths now, who desire a degree but cannot afford to go to Europe, to obtain an excellent degree locally. We in turn are saved from two alternatives; a Ceylon university which would have been eventually ridiculed, and affiliation with one of the Indian universities'. The latter alternative was resisted after the experience of Calcutta examinations which lent themselves, to 'that most pernicious system of instruction, namely cramming'.

²¹ Only Protestant Christian schools were recognized until 1865 and only Christians were eligible for government employment until 1858. *Final Report of the National Education Commission*, Sessional Paper XVII—1962, p. 144.

²² Two scholarships were awarded annually, for arts and science respectively, on the basis of performance at the Cambridge senior, and later the London intermediate, examination.

The shortcomings of the arrangement by which these miscellaneous, privately established colleges provided higher education were pointed out by the Reverend Langden, a Wesleyan missionary from Kandy, in 1884, in a letter to the Governor. He suggested that the 'deplorable diversity' in standards and organization could be alleviated by the establishment of a local university and he maintained that, considering the number of Ceylonese in the civil service, the legal, medical and other professions, and the church, there was enough talent to start a university in Ceylon. By the turn of the century, the educated Ceylonese became increasingly convinced that British university examinations were no substitute for university education. Moreover the University of London warned the education authorities that it was 'exceedingly doubtful' whether colonial examinations would be continued and official inquiries were made of Durham and Victoria Universities as to the possibility of their holding examinations in Ceylon. The Director of Public Instruction reported in 1900 that 'as education progress and prosperity continues, a number of parents desire something more for their sons than our present system contains; something in the shape of a degree without the necessity of going to England for it. It is a most laudable ambition, to be cautiously but firmly encouraged'. And again, three years later, when public pressure for a university was becoming more articulate, he reported: 'On the whole, the education given in the upper forms of our best colleges is quite as good as can be expected and the demand for something better, though intelligible and admirable is of comparatively recent origin. In our process of development we must avoid the dictates of noisy impetuosity and rhetorical exaggeration, and guard above all things against flooding the country with "failed B.A.s"'.²³

Those who were most vocal in their demand for a local university were the English-educated graduates and professional men, particularly those who had the advantage of education in British universities. In 1906 some of the leading members of this stratum formed the Ceylon University Association which argued for the establishment of 'a university adapted to local needs'. It was ar-

²³ For a fuller exposition of official and unofficial views regarding higher education, cf. Chandrasegaram, *op. cit.*

gued that the London system 'naturally deleted the oriental surroundings and specially the languages'. They insisted that knowledge imparted by a local university should be 'relevant and adequate' and should include agriculture and science as well as fine arts and music, all of which were completely neglected by the colleges at that time. Sir P. Arunachalam argued in 1906 that instruction directed to foreign examinations left pupils uninterested in the subjects they studied, that the majority were strangers to Western culture, while those few who contrived to assimilate a modicum of European culture owing to the Western-oriented background of their homes passed through a curriculum in which the mother tongue was proscribed. Arunachalam was certainly too optimistic in assuming that the university would achieve his ideals. But these early nationalists regarded a university as essential to national revival: 'the creation of a university meant national existence, and without sitting idly to arrest the process of denationalization, the Ceylonese will have to wake up, as they owed a duty to themselves and to posterity'.²⁴

Nationalist organizations and pressure groups interested themselves in what came to be known as 'the university movement'. The Ceylon Social Reform League, founded in 1905, published a journal edited by Ananda Coomaraswamy, who was one of the leading advocates of a cultural renaissance, and whose deep interest in traditional Sinhalese culture was embodied in his monumental *Mediaeval Sinhalese Art*.²⁵ Coomaraswamy did not want an 'Anglicising university' but rather 'an institution which will give education and not merely estimate the amount of knowledge possessed by examinees', an institution in which students would acquire 'culture and independence of thought'. He did not oppose the use of English but was against the neglect of the mother tongue. He made a special plea that the projected university should dedicate itself to the development of the oriental languages.²⁶ The university was conceived of as a residential institution which

²⁴ Chanmugam in *Journal of the Ceylon University Association*, I (1906), p. 2.

²⁵ Coomaraswamy, A., *Mediaeval Sinhalese Art* (Broad Campden: Norman Chapel Press, 1908).

²⁶ These views were expressed in articles in the league's journal, *The Ceylon National Review*, in its first issue of January 1906.

would revitalize and promote indigenous culture, at the same time providing instruction in modern science, medicine, commerce and agriculture. Arunachalam declared that:

It will be the chief aim of the Ceylon University while making efficient provision for the study of English and the assimilation of Western culture, to take care that our youth do not grow up strangers to their mother tongue and to their past history and traditions. . . . The vernacular literature of the day will then be rescued from its pedantry and triviality and be made a worthy vehicle for the dissemination of what is best in Western and Eastern culture. . . . Then at last the masses of our people will be really influenced for the better by Western civilization, which seems otherwise likely to leave no enduring mark than the addition of some European words to our vocabulary and the incorporation of some European customs in our social life.²⁷

The Ceylon National Association, revived in 1909, and the Ceylon Reform League, founded in 1917, also emphasized that the existing system of education stunted the education of Ceylonese youth and hampered the growth of national culture.²⁸

In 1912 the government appointed a sub-committee of the Legislative Council of 10 members, five of whom were Ceylonese, to examine whether it was desirable to continue the existing arrangements concerning Royal College and the more prominent grant-in-aid schools preparing students for London University examinations, or whether it should be replaced by a system under which higher education would be provided through a single institution located in Ceylon, either a university or a university college. There was sufficient interest in the subject for 63 persons to give evidence before the committee but there were considerable differences of opinion. Some witnesses thought that the colony was not ripe for the establishment of a university, others wanted Royal College to be strengthened so as to provide instruction for London

²⁷ *Journal of the Ceylon University Association* (1906).

²⁸ *Year Book of the Ceylon Reform League*, 1917-18. The leaders of the national league included Sir P. Ramanathan (1851-1930), Sir P. Arunachalam (1853-1924), Sir James Peiris (1856-1930), Sir Baron Jayatilaka (1868-1944), E. W. Perera (1875-1953) and D. S. Sananayake (1874-1953).

University examinations and yet others favoured a residential university located in Colombo.

The committee recommended the establishment of a university in Ceylon in order to bridge a gap in the existing system of education. They pointed out that the time of the best secondary school-teachers was taken up in preparing a very few students—at times a single pupil, and usually not more than three or four—for London University examinations, thus giving rise to a dissipation of the limited personnel for higher education. The committee stressed the need for a local alternative for families who could not afford to send their sons to England for education, particularly 'in view of the large development of a fairly opulent class'. The Governor, commenting on the report of the committee, referred to the existence of a class 'fairly well-to-do but not sufficiently wealthy' to send their sons to England.²⁹

The Establishment of University College

The recommendation of the Education Committee of 1912 could not be implemented owing to the First World War but the government had accepted in principle its recommendation of the establishment of a local university. The Governor, Sir Robert Chalmers, in a dispatch of 1915, stated that he had no doubt that the situation in Ceylon 'really calls for the establishment of such an institution', if only on purely educational grounds. He restated the views of the 1912 committee regarding 'the dissipation of higher education forces' in numerous colleges in a system 'too exclusively directed for examinations' and urged the establishment of a university. He thought that the Ceylonese—whether Sinhalese or Tamil—possess a natural aptitude for culture on university lines. . . . As a result, a new Ceylon university would lead to 'increased efficiency in the public service' and 'the enrichment

²⁹ Governor MacCallum in a Report of 24 December, 1912. It may be mentioned, however, that only 14.3 per cent of school-going children were being educated in English in 1912. The leaders of the national movement constituted a minute segment of that very small English-educated class. It was an elite, the professional composition of which is revealed in a Ceylonese *Who's Who* of 1916-17, with 118 entries, as follows: law, 57; proprietary planters, 19; medicine, 17; government service 16; business, 4; education, 2; others, 3.

of the general intellectual life of the island'.³⁰ In 1917 financial provision was made for buildings but there was a further delay of four years before the university was opened, probably because the Secretary of State had misgivings about the wisdom of establishing a university and was not entirely convinced by the Governor's arguments. In Ceylon, however, official opinion was definite that the time had come for a university and in 1920 the Director of Education stated that if the new University College acquired a high reputation for its lectures, 'it is bound to be of great benefit to the people of the country and to develop within a short time into a university with a degree which will have a permanent value and a value outside Ceylon'.³¹

In 1921, University College was opened in Colombo as a government institution affiliated to London University. Unfortunately the high ideals of a fusion of indigenous and Western cultures for which the pioneers of university education had contended early in the century were neglected when University College actually came into being, owing to the increasing Westernization of the middle class availing themselves of university education.³² University College did not measure up to the ideals of those who had expected it to contribute to a renewal of indigenous Ceylonese culture³³ any more than it did to the hope of those who wished it to become a centre of Western culture.³⁴ The foreign content of

³⁰ *Despatches relating to the Establishment of a University College in Ceylon*. Sessional Paper XVI—1915.

³¹ *Correspondence relating to the Establishment of a University College in Ceylon*. Sessional Paper IX—1920, p. 3.

³² Not even the beginning of Oriental Studies at the University of Ceylon in 1942 helped to break down the barrier between East and West. In fact those students in the Oriental Studies Faculty who adopted a "national" dress were treated patronisingly by the rest of the undergraduates who took for granted the continuation and increasing ascendancy of the culture which they embodied. (It is significant that the "national" costume which was despised by so many undergraduates of the forties, came to be widely adopted by the political leaders of the fifties).

³³ The recent vitality of the arts and literature in Ceylon cannot be attributed to the university, although the Sinhalese theatre owes much to the creative efforts of Professor Saratchandra, particularly his music-dramas *Maname* and *Sinhabahu*.

³⁴ Sir Ivor Jennings, the last Principal of University College and the first Vice-Chancellor of the University of Ceylon, had asserted that "the colonial university is not merely a university; it is also National Gallery,

curricula oriented towards London University examinations resulted in the retardation of the indigenous languages and the stultification of scientific development. The long delays in announcing results of examinations conducted by London University during the Second World War proved to be a great hardship to students and made Ceylonese politicians restate the case for an independent university in which students would have direct contact with their teachers. Once more there were complaints voiced by members of the elected legislature, the State Council, regarding 'the alien orientation of the whole system of education'.

After a protracted 'battle of sites', land was acquired in Kandy and in 1942 the State Council passed a Bill 'to make provision for the establishment, incorporation and regulation of a university in Ceylon'. The Ceylon University Ordinance of that year created an autonomous university, incorporating the old Medical College as one of its faculties. The main campus was to be situated in Peradeniya and, when the transfer was complete, it was assumed that the university would be completely residential. The choice of a campus in the Kandy district was supported on the ground that it would be close to the ancient capital, an argument which carried much weight with those who conceived of the new university as an institution which would be the focus of a cultural renaissance. The physical transfer of the university to Peradeniya took place in 1952 when the Arts Faculty moved to the new buildings but within a decade an increasing undergraduate population made it necessary for the university to operate in two campuses and even the Peradeniya campus, which was intended to be completely residential, could not provide residential facilities for all its students.

Populistic Politics and Educational Opportunity

Social pressures external to the university have increasingly determined the development of higher education in recent decades. The advent of universal suffrage under the Donoughmore Constitution, which was implemented in the thirties, made prospective members of the State Council woo their electorates with promises

British Museum, Burlington House, Bloomsbury, Chelsea, Royal Society, London Library, Drury Lane, and much more besides". Jennings, I., "Universities in the Colonies", *Political Quarterly*, XVII (1946), 1, pp. 230-31.

of indefinite extension of educational opportunities, without any reference to the employment prospects for educated youths. Many election posters of the period advertised political candidates as 'friends of the poor', for the indigent majority now had a vote. Since finance was one of the subjects 'reserved' by the colonial government,³⁵ the democratically elected members of the legislature ranged themselves as a permanent opposition, whose role it was to embarrass the colonial rulers and to secure as many costly benefits as possible from them. A system of central schools was set up, the aim of which was to provide secondary education for the children from the primary schools within a certain radius of each central school. In 1945 the Free Education Scheme provided education from kindergarten to university free of all charges. The early prospect of independence did not dampen the enthusiasm of the state councillors who were aware of the huge sterling balances accumulated during the war in payment for Ceylon's rubber exports.

The pressure of Ceylonese populism could not countenance the bifurcation of the population into vernacular and English-educated and the social and economic dominance of the latter gave rise to conflict. A population of over six million Sinhalese and Tamils, with only 400,000 literate in English, was found to be governed by 20,000 English-speaking government officials. As a select committee of the State Council commented in 1946, 'it is possible to attain the highest post in the land, amass wealth and wield influence, without knowing a word of the national languages'.³⁶ In order to end the domination of the English-educated minority, the mother tongue was made the medium of instruction in schools.

These post-war developments had a profound impact on university education. The University of Ceylon naturally became the object of populist criticism because its English-educated graduates dominated the professions and manned the higher technical and administrative cadres of government departments.³⁷ There was a

³⁵ Through one of the three Secretaries appointed to the State Council by the Governor.

³⁶ *Sinhalese and Tamil as Official Languages*. Sessional Paper XXXI—December, 1946.

³⁷ In 1950 a sample survey revealed that for 25 per cent of undergraduates, English was the home language: the fathers of 75 per cent of males

tendency to regard the university as a mill through which prospective non-manual employees had to pass, a conception in sharp contrast to the idealist view of the university as a focus of culture and learning. According to the former view, the university was too exclusive and admitted too few students. The popular demand was that university instruction should be in the national languages³⁸ and that it should be open to much larger numbers of students than at present, by means of external examinations, if necessary. The pressure groups which demanded unlimited extension of university education wished for a situation in which all young people could 'qualify' for socially esteemed jobs, which are limited.³⁹ (Professional and public service appointments accounted for only 5.7 per cent of the gainfully employed in 1957).

The Ten Year Plan envisages an increase in the work force from 3.5 million persons in 1957 to 4.8 million in 1968. The estimated increase in 'public administration and other services', from 25.7 per cent of the total work force in 1957 to 28 per cent in 1968, will provide employment for almost half a million more white-collar workers at the end of the plan period. The school-attending population 15 years and over will by then increase to 740,000.⁴⁰ The employment opportunities are obviously insufficient to absorb the increasing number of school-leavers and graduates in the Westernized white-collar or *rentier* category. In relation to their proportion in the total population, protestant Christians were overrepresented by 1,070 per cent, while Buddhist were underrepresented by 24.7 per cent. Strauss, Murray, "Family Characteristics and Occupational Choice of University Entrants as Clues to the Social Structure of Ceylon", *University of Ceylon Review*, IX (1951), 2.

³⁸ 'National languages' (*swabhasa*) refers to Sinhalese and Tamil. The former is the 'official language' (*rajabhasa*). *The Final Report of the Commission on Higher Education in the National Languages*, Sessional Paper X—1956, asserted that 'A Ceylon university would be useless as such if it fails to undertake its share in the development of the national languages of Ceylon' and that graduates should be 'proficient in their knowledge of the language and life of the nation to which they belong'. But it also recommended that 'all pupils who possess the ability for higher education should be competent in English to enable them to use it as an effective tool in acquiring knowledge during higher studies'.

³⁹ Cf. Green, T. L., 'Education and Social Needs in Ceylon', *University of Ceylon Review*, IV (1952), 4.

⁴⁰ Selvaratnam, S., 'Some Implication of Population Growth in Ceylon', *Ceylon Journal of Historical and Social Studies*, IV (1961), 1.

duates who aspire to white-collar employment. The Planning Commission concludes that 'the educational system must now be more aggressively geared to the needs of development with a greater bias to technical and scientific education'. Meanwhile until this happens, an increased proportion of school-leavers who are qualified and who cannot readily find employment seek admission to university.⁴¹

The Commission on National Education, in its interim and final reports,⁴² showed very little interest in these critical problems although its terms of reference required it 'to examine and make a comprehensive review of the entire educational system now obtaining in Ceylon', including technical education.⁴³ [Subsequently a commission was appointed to inquire specifically into technical education, and its main recommendation was the provision of training facilities at three levels—technologist level (at universities and colleges), technician (at polytechnics) and craftsmen (at junior technical schools)].⁴⁴

It is no easy task, however, to control and transform a secondary and higher educational system which has been shaped by the insistent belief that every citizen has a right to free education and to the enjoyment of its rewards, which include administrative, managerial and professional employment. Higher educational policy requires adequate factual information as well as a courageous political leadership willing to use this information and these are conspicuous by their absence. The popular member of parliament is in the predicament of the Dodo in *Alice in Wonderland* who remarked at the end of the Caucus race that 'everybody has

⁴¹ There were over 15,000 students taking the university entrance examination for the 1964 session. The intake of new students in 1961 was 1,273. In 1962, 1,550 students were admitted and the university conducted external examinations for the first time for 1,015 candidates.

⁴² Sessional Papers I and XVII—1962, respectively.

⁴³ The commission comprised 20 members, representing various 'interests' and all of them signed the *Final Report*, 'subject to rider and/or dissent', which take up 86 pages of the 211 pages of the *Final Report*. A comprehensive review of education was obviously impossible in the circumstances but matters of popular controversy such as 'cultural education' and religious instruction were considered.

⁴⁴ *Report of the Commission of Inquiry on Technical Education*, Sessional Paper X—1963.

won, and *all* must have prizes'. And like Alice, forced to distribute comfits all round, the government is compelled to provide political sops in the form of new school buildings, more teachers and free midday milk and meals for schoolchildren.

In 1956 'the language question' became the principal election issue with the opposition taking the more radical viewpoint in favour of Swabhasa. The dominant political party since independence, the United National Party, was overwhelmingly defeated. Buddhist monks played a significant role at this epoch-making election, particularly a section of 'political bhikkus' forming a pressure group known as the *Eksath Bhikku Peramuna*. Apart from the demand to make Sinhalese the official language immediately, there was support for making Buddhism the state religion, reviving the indigenous system of medicine (*Ayurveda*), the national dress, traditional arts, etc. (The communal tensions which followed the election culminated in the racial riots of 1958 which made it necessary for the Governor-General to declare a protracted state of emergency).⁴⁵ The policy of the government in regard to university education should, as the recent University Commission Report puts it, 'be viewed against the background of that unholy terror that stalked the country in those dark days'.⁴⁶

The University of Ceylon seemed demonstrably out of harmony with these populist forces. The government, under stress to provide university education for thousands of school-leavers educated entirely through the medium of the national languages, attempted to negotiate with the university to alter the medium of instruction from English to the national languages. The university authorities⁴⁷ pointed to the various problems involved—the lack of books

⁴⁵ For details see Vittachi, Tarzie, *Emergency '58* (London: André Deutsch, 1958). The constitutional position is analysed by Wilson, A. J., 'The Governor-General and the State of Emergency, May 1958-March 1959', *Ceylon Journal of Historical and Social Studies*, II (1959), 2. Dr Wilson was apprehensive that the ill-defined power vested in the Governor-General 'is likely to result in the gradual erosion of parliamentary responsibility' and 'to open the possibilities for the establishment of arbitrary rule'.

⁴⁶ *Report of the Universities Commission 1962*, Sessional Paper XVI—1963, p. 31. The report is summarized in *Minerva*, this issue, pp. 492-518.

⁴⁷ There was conflict on this issue between the University Senate—the academic body—and the Council—the executive organ—and a joint meeting was called but its deliberations were informal.

in the vernacular languages, the need to evolve a terminology for technical subjects and to recruit an academic staff to teach in three languages at a time when the staff available to teach in English alone was inadequate. The heads of the two Buddhist Pirivenās, Vidyodaya and Vidyālakara, were, however, willing to step into the breach where the University of Ceylon had apparently failed.

The Pirivenas were raised to university status 'by the waving of a magic wand'. The Act of Parliament of 1958 which created two new universities was based substantially on the Ceylon University Ordinance of 1942, and the two institutions created in 1873 and 1875 respectively, solely to promote Buddhist learning, were declared by law to be modern universities. Meanwhile the University of Ceylon was penalized by a reduction of its annual grant by one fourth. It became clear that, despite its legal autonomy, the university, being wholly dependent on a direct parliamentary vote, was not in a position to defy government demands completely.⁴⁸

The dominant egalitarian ideology made it impolitic to insist in public that expenditure on education, health, housing and other social services (besides subsidising both producer and consumer of the staple rice) must depend on the country's economic resources. A proposal to limit the number of children in secondary schools by means of a selective test for aptitude would have been tantamount to political suicide.⁴⁹ Secondary schools lacking science facilities were therefore filled to capacity with arts students confined to a very few subjects. Those who finished secondary school aspired to go on to university. The majority of candidates taking the university entrance examination from rural schools have been restricted to Sinhalese, Pali and Ceylon history and those who have succeeded have usually taken a 'general' degree in the same

⁴⁸ The *Final Report of the Commission on Higher Education in the National Languages*, Sessional Paper X—1956, recommended that the medium of university instruction should be determined by the government and not by the university. The university academic staff have now been notified by the Council that they will be required to be proficient in Sinhalese or Tamil by 1966 and recent posts have been advertised with the stipulation that applicants must be proficient in the national languages.

⁴⁹ According to Professor W. A. Lewis (Letter to the Editor, *Economist*, 10 January, 1959) 4 per cent of each generation enters secondary schools in Jamaica and this is all that countries at the stage of development of Ghana can use. The Indian percentage of 10 is too high.

subjects, with the occasional student substituting economics, geography or Western history for one of these. Their aim has been to become school teachers.⁵⁰ The cycle will thus repeat itself again and again. More arts graduates as teachers especially in rural schools will produce more candidates for arts degrees in a few subjects. The overproduction of such graduates already common to the rest of Asia is now well in sight in Ceylon.

The University as an Intellectual Institution

The pressure on the universities had been increasing every year. The conditions of teaching and research were deteriorating and the future of the University of Ceylon looked very unpromising. In this situation a few ambitious teachers saw in the tensions after 1956 an ideal opportunity for self-advancement by associating themselves with various currents of the populist agitation. Whereas the left-wing intellectual—who resembled his European contemporaries—dominated the university scene in the thirties and forties, the last decade produced a new type of academic man who responded to the populist challenge by adopting a national dress, agitating for an immediate change to the national languages, vaunting a militant Buddhism and even resorting to magic and sorcery against his opponents. Organized into groups, such men had much political influence. The liberal Sinhalese were labelled 'anti-national'. An extremist group of teachers even supported a 'take-over' of the university by the government in the hope that non-academic considerations would determine appointments and promotions.

The government from its side showed little regard for the university which was rarely represented on official commissions and was excluded from the planning organizations. The university has thus been prevented from playing its proper role in the public life of the country, as a constructive critic and counsellor of government or as a guide to public opinion. The university cannot contribute to the discussion and formation of public policy through research, in the way in which universities do in more advanced countries.

⁵⁰ A sub-committee of the Faculty of Arts recently recommended the inclusion of new subjects such as Russian, Chinese, etc., in the hope that schools will recruit more teachers and diversify their courses.

Political leaders who have no appreciation of the function of a university except as a device for satisfying what they think is popular demand and as a mill for turning out potential white-collar workers are the most prone to criticize the academic staff of the university for meagre accomplishments. Without awareness of what is involved in research, they criticize the staff for doing so little of it. They do not mention that the university teachers have large amounts of routine clerical work to do and that even professors do not have secretaries, and few of them have typists. Many lecturers have to pay clerks to work overtime to type articles for them.⁵¹ Even professors are not provided with separate rooms—that privilege is reserved for administrative ‘officers’—and students often have to be interviewed in rooms shared by several members of a department.

The latest annual report of the University Council⁵² lists the supplementary votes additional to what is ambiguously described as ‘funds already allocated to the departments for teaching and research’, presumably referring to laboratory equipment, stationery, etc. The total thus voted directly for research amounts to Rs 12,330 (about U.S. \$2,590) distributed between 14 projects, mainly in the Faculty of Medicine.⁵³ The largest grant of Rs 1,970 (U.S. \$420) was for research on abnormal haemoglobins. The only assistance from ‘outside sources’ for research (apart from grants for travel and publications) is “a contribution of \$15,000 from the Population Research Council of New York to the Department of Public Health for the development and support of a study on ‘population and fertility trends in Ceylon’.” The Population Council’s grant is more than five times the entire research appropriation for the university!

It had always been assumed by those who argued for a university in Ceylon that the two functions of imparting basic knowledge and conducting research could coexist in the same institution and that they were in fact complementary. Whatever might

⁵¹ Administrative officers are better provided. The irregular work-loads for typists in the faculties is made an excuse for denying the academic staff clerical assistance.

⁵² *Twenty-first Annual Report of the Council, 1962* (Colombo: Ceylon University Press, 1963).

⁵³ The Vice-Chancellor was formerly dean of the medical Faculty.

have been the varying emphases on the amount of attention to oriental subjects, there was a general agreement on this. The large intake of 'general' students has led to the hypertrophy of the function of imparting basic knowledge and the atrophy of the research function and many academic staff members who have shown exceptional promise when working for their Ph.D.'s abroad,⁵⁴ fade away on their return owing to their heavy teaching load and their lack of contact with scholars working in their field. The university has also been anxious to maintain a first degree standard on a par with British universities. (The system of external examiners helps to maintain this standard). The result has been the development of undergraduate courses of relatively high standard. This has gone together with the almost complete absence of a research tradition in the form of postgraduate schools and research institutions. In short, a rigorous undergraduate training over a period of four years, which qualifies graduates to pursue higher studies, ends in a blind alley; graduates must either go abroad or renounce hope of doing research.

There are other reasons as well for the absence of research students in Ceylon. The able graduate secures a coveted government job soon after he leaves the university with his first degree and, however great his interest in his subject, he would sacrifice his chances of employment if he chose to remain in the university for postgraduate research. The young man who stays on for postgraduate work finds that vacancies in the university staff are severely limited and he becomes 'over age' for government posts; a master's degree or even a Ph.D. will not enable him to overcome this handicap.

The basic knowledge courses leading to unspecialized degrees could well be provided by some of the larger 'colleges' which could be 'affiliated' to the university for this purpose, i.e., recognized as institutions equipped to teach for these degrees. It is neither necessary to have Ph.D.s giving these courses at these ins-

⁵⁴ Assistant lecturers are sent abroad after two years' teaching to obtain postgraduate degrees abroad and are confirmed as lecturers on their return. While this policy is admirable in that it has produced a highly trained academic staff, it is wasteful if the lecturer is confined to imparting basic knowledge and has no research students to supervise or opportunities to do his own research.

stitutions, nor to maintain standards on a par with British universities. The tendency to accept London University syllabi and standards unadapted to local conditions dies hard. Ceylon educationists have failed to realize that the British system which they inherited was based on the assumption that only the most able (or those otherwise most fortunate) should have access to higher education. The demand in Ceylon is to increase the total numbers of the educated without regard to merit. If this demand were satisfied by providing popular diplomas in folk high schools and if, as suggested by the Ten Year Plan, the educational system should be 'aggressively geared' to technical and science education, on the lines suggested by the Technical Education Commission, by new university-level technical colleges and polytechnics, the university could then be relieved of the unrewarding task of imparting basic knowledge for general degrees. It could still prescribe syllabi and set standards by acting as a moderating, if not an examining body. Its energy could then be addressed to the development of specialized training for 'special degrees', which should be followed more frequently than at present by postgraduate training. In this manner the energies of the numerous well-trained and qualified scholars and scientists who are equipped to undertake and supervise research will not be wasted and a research tradition, which the country needs, for its cultural and economic development, could evolve.

Paradoxically, its well qualified staff, preoccupied with the observance of international standards, has, in a sense, inhibited the development of a research tradition in the University of Ceylon. The intellectual centre of gravity continues to be located in the metropolis—in this case, the United Kingdom—and even extremist nationalism often turns out to be no more than an embittered xenophilia.⁵⁵ The result is that European (and latterly American) universities find it easy to attract the most talented young Ceylonese for research abroad. Thus the experience and stimulation of training young men and women in research is denied to the Ceylon university teacher and the country loses the talents of both the teacher who remains and the student who departs.

⁵⁵ Thus it is not surprising to find that a zealous Buddhist propagandist on the academic staff bases his claim to 'superiority' on a London Ph.D. or to a book published in England!

Given the preconditions for the creation of a proper university, it would still not be enough for the isolated scholar to work single-handed on an abstruse problem in a field in which he has obtained a foreign Ph.D., linked only to his co-workers abroad by correspondence and esoteric journals and occasional visits. The development of areas of research of local concern in which the limited personnel of a university department can fruitfully co-operate is a necessity for the establishment of a modern university in a developing country. There must be an indigenous intellectual community occupied with locating problems of immediate relevance and using modern procedures and standards of universal validity. Such an intellectual community does not yet exist in Ceylon and the context in which the university operates renders it difficult for it to come into existence.

The crisis of the university in Ceylon is in part a product of the clash of ill-conceived concern for tradition and an equally ill-conceived concern for modernity. The idea that indigenous culture could be revitalized and propagated through a university was equally doomed to failure because the populist conception of 'culture' encompassed objects and activities which could not be included in university curricula; it was a polemical demand based on the compulsive belief that we must cultivate our ancestral heritage as an antidote to an allegedly dominant 'foreign' culture. It was not perceived by populist critics of the University of Ceylon that it could become an integral part of the life of the country only if it were allowed to be a genuine university using the techniques and concepts developed in foreign universities to teach and study what is needed in a modern Ceylon.

PART 4

UNIVERSITY AND STUDENTS

THE UNIVERSITY STUDENT IN SOUTH AND SOUTH-EAST ASIA

JOSEPH FISCHER

I

THE WIDESPREAD and furious involvement of university students in politics is one of the striking features of Asian history in the present century. In India, Burma and Japan university students have been initiators and agents in nationalist and independence movements, in the overthrow of governments and in the rapid growth of radical political factions and parties. In the course of this political activity, student indiscipline has developed its own well-established traditions in these countries. In Burma, India and Indonesia the activity of university and college students in the period prior to independence did not become less intense once independence was attained.

The patterns of student conduct formed in those circumstances have persisted even though the ostensible objects of student agitation were attained with the advent of independence. In India 'student indiscipline' has been a continuing preoccupation of administrators and it has claimed the attention of the central and state governments. In June 1963, the present military government of Burma commanded by General Ne Win was so provoked by rebellious youth that it destroyed the student union building at the University of Rangoon. Whereas before independence political activities of students were focused on issues of independence from the foreign ruler and all grievances were given a political tone, today's student agitation in the universities of South and South-East Asia is much more diffuse and apolitical. It often appears to be disproportionate to the trivialities which give it occasion. Bloody student riots in India and Burma have arisen from rises in tramcar fares, grievances against individual teachers and other staff members, the quality and quantity of food in refectories and

shortened holidays. The redress of grievances frequently leaves recalcitrance against academic authority just where it was before.

The fact of the matter is that the alleged grievances often do not at all express the sources of distress in the lives of so many of the young people of these countries. There is a general malaise of educated youth in countries like Burma, India, Ceylon, Indonesia and Pakistan. Much of the agitation is a response to the strains of modernization in tradition-bound and impoverished countries and its apolitical character represents, in some measure, an advance over the pre-independence readiness to think that political changes would resolve all existing difficulties. Nowadays in South and South-East Asia, the violent outbursts of the students have generally been directed towards persons and arrangements within the university itself. Teachers, vice-chancellors, deans, principals, examination questions, syllabi, hostels and university buildings have been the targets.

In Burma, India and Ceylon, recent agitation has not resulted in country-wide movements which espouse a particular ideology or which seek a major political change. The manifestations of student activity in certain Asian countries outside South and South-East Asia such as those which played a large part in South Korea in the past few years are not reproduced in the countries in which university students once contributed so much to independence. The traditions of Aung San, U Nu, Soekarno and Subhas Chandra Bose live on in student eruptions against authority, but they have lost their political and ideological 'cause'.

In the recent revolutions and political disturbances in South Korea, Turkey, Iran and Japan, the political power of student groups has assumed national proportions and, in marked contrast to their South and South-East Asian contemporaries and coevals, has been aimed directly at the government and the political parties in power. In Japan, the numerically small Zengakuren overnight has brought out 10,000 students to barricade the Diet or help to prevent the official visit of the President of the United States. In Korea, students in the face of military force martyred themselves and in large measure precipitated the abrupt downfall of Syngman Rhee. In Turkey in apparent agreement with the army, university students became insurrectionary heroes in the downfall of the Menderes government. In Iran, despite the existence of a poten-

tially repressive military machine, students of the University of Teheran have constantly flaunted the authority of the government.

In Latin America, too, in the Argentine, Peru, Brazil and Ecuador, for example, the adherence of youth to movements of political extremism and the use of violence to suppress them have been constant features of university life in the present century. Latin America probably harbours the politically most active and powerful body of university students in the world. Why, during a time of such extreme disaffection from the world of their elders, do the university students in the region in question become so apolitical? Why should they be so disaffected, so restless and excitable? This is the fundamental question. Only when we have considered this can we begin to treat seriously the causes of both the political and non-political directions of this state of agitation.

II

The university in South and South-East Asia, as it is everywhere outside Western Europe, is an implantation of foreign inspiration; sometimes even of foreign foundation and support. They are largely the product of the urge to modernize.

The period between the beginning of the First World War and 1930 was marked by the opening of a great many universities and colleges. In India the following were established: Mysore and Banaras Hindu University in 1916, Osmania in 1918, Aligarh Muslim University in 1920, Dacca and Lucknow in 1921, Delhi in 1922, Nagpur in 1923, and Andhra in 1926. The Universities of Calcutta, Bombay, Madras and Allahabad date from the nineteenth century (1857, 1882 and 1887). In Burma, the University College was established in 1920 during a time of political crises (Rangoon University as such did not emerge until 1942 but its establishing act was suspended until the end of the Second World War). The parent college of the present University of Ceylon (incorporated in 1942) dates from 1921. In Thailand, Chulalongkorn University opened its doors in 1917, and Thammasat University in 1934. No universities as such existed in Indonesia during its colonial period. A number of faculties, however, had been established prior to independence; they included the Technical Institute in Bandung (1920), the Faculties of Law (1924),

Medicine (1927) and Literature (1940) at Djakarta, and the Faculty of Agriculture (1940) at Bogor. Many of these colleges and universities were established partly to meet increasing political demands on the part of the educated and commercial classes for wider educational and employment opportunities.

When independence was attained, many Asian universities found themselves adrift institutionally with depleted staffs, inadequate resources and facilities, rapidly rising enrolments and without any significant achievements in science and scholarship to justify self-esteem and public appreciation. Independence was the occasion for the establishment of more universities. The Asian universities—the older ones as well as the newly established ones—found themselves highly vulnerable to the pressures generated by independence. The main, and perhaps only, response of the universities of Asia to governmental and public demands has been expansion. Serious questions of university reform have had to be neglected in order to meet this primary obligation to expand in response to the greatly whetted appetite for educational qualifications which is so characteristic of formerly colonial territories.

Now, as before, Asian governments remain the chief employers of educated persons in their own societies. The recruitment of administrative, technological and most members of the political elites from university ranks creates a further bond between Asian universities and their governments. With the exception of most of the universities in the Philippines, practically all of the universities of the Asian states are state-financed.

In Ceylon the University at Peradeniya, though nominally a private corporation, is, despite its income from tuition fees, now primarily dependent upon an annual parliamentary grant. Two Buddhist universities established in 1961 are under the jurisdiction of the Ministry of Education. In India the universities are almost totally dependent on what they receive from the central and state governments. In Burma the Universities of Rangoon and Mandalay are private corporations which have in the past received non-audited block grants from the central treasury; the Ne Win government has now brought these universities under military control. In Thailand the two state universities (Chulalongkorn and Thammasat) are for the first time experiencing direct government intervention through the recently established National Edu-

cation Council which is a part of General Sarit's Prime Minister's Department. In Indonesia universities are not only entirely dependent upon the resources of the central government but formal control over them has been, since 1961, exercised by a Ministry of Higher Education. However, in essential matters such as the appointment of staff, the content of the instructional programme and the number of students in various faculties, universities have *de facto* autonomy.

Only in the Philippines are private universities significant. There are no private universities in Ceylon, Burma, Thailand and Malaysia. Indonesia has two unimportant private universities: the University of Islam in Jogjakarta and Nommensen Lutheran University in Medan. Viet Nam has only one at Hué. In contrast, in the Philippines 19 of the 20 universities are private and enrol about 280,000 of the 300,000 university students in the country. However, despite this, one of the major private sectarian universities (Santo Tomas) receives a government subsidy which meets 60 per cent of its annual expenses. The two major private secular universities (University of the East and the University of the Far East) support themselves almost entirely from student fees.¹

In view of this dependence of the state on the university for personnel and the nearly absolute dependence of the universities on the state for the employment of their graduates, as well as the absolute dependence of national universities upon the state for financial support, the lack of effective governmental control is remarkable. The great expansion of higher education has taken place practically outside the direction of even those governments that are highly committed to a socialistic pattern of national development. Political parties have been abolished or are placed under control, labour unions have been restrained, severe censorship of the press and publication has been instituted, private enterprise has been constructively regulated yet the higher educational system has in the main been left to shift for itself as regards admissions policy and courses of study. It is only in the medium of instruction that the government has intervened. In Ceylon the government's demand for the use of Sinhala in the public educa-

¹ The relationship of higher education to government is admirably treated by U Hla Myint: *Pacific Affairs*, 'The Universities of South-east Asia and Economic Development', XXXV (Summer, 1962), 2, pp. 116-27.

tion sector has generated intense conflicts. Indonesia has made the greatest break with the language of its former ruler as a medium of instruction, although, remarkably enough, Dutch sources still dominate the offerings of the various law faculties.

III

On the whole, except for speeches and occasional police actions, the governments do little about the universities' relations with their students. Where government has begun to express serious concern, the unrest of students has already begun to assume proportions which preclude ready governmental mastery of the situation. No effective procedures have been devised to deal with student indiscipline that has closed universities and caused deaths and injuries at Lucknow, Allahabad, Banaras, Calcutta, Patna, Rangoon, Peradeniya and Mandalay.

Rangoon University students steal a set of final examination papers, and all students are passed without examinations for the current academic year. Students at Allahabad University barricade the residence of the rector and prevent the delivery of food supplies. Students in Banaras damage the laboratories of the modern medical school to proclaim the need for greater support for traditional Hindu medicine. Students at Dacca University in East Pakistan are provided with a student union building for 'cultural pursuits', and then turn it into a centre for political agitation and violence. Politicians in Ceylon, Burma and Indonesia, for example, often pay submissive deference to even the most violent activities of students. In these countries to rough up a student is a *cause célèbre*, and a student who dies in protest, be it through self-denial of food, an accident, a police bullet or a love-suicide, becomes, overnight, a kind of minor hero.

Governmental reactions to the problems of university student indiscipline in South and South-East Asian countries range from passive and patient deference (India) to angry criticism and, finally, to military counter-measures (Burma). It is not that the political elites of the new states of South and South-East Asia are entirely indifferent to this student eruptiveness. They are distressed by it. They find it inexplicable and they are bewildered by it. Many of the political leaders cannot understand the rebellious

behaviour of youth in countries where colonialism has been terminated, where, they believe, there is a great need for talented and energetic young adults, and where the government does so much for them as compared with what it does for other sectors of the population.

The young adults who attend universities in 1963 form an important and growing body; there are over 300,000 in the Philippines, 50,000 in Indonesia, about 160,000 in Pakistan, about 3,500 in South Viet Nam, some 2,500 in Malaysia, about 42,000 in Thailand, about 15,000 in Burma, close to 4,000 in Ceylon, and in excess of 1,000,000 in India. The total for India represents more than a doubling of the university population since 1951. The University of Ceylon student population has grown from 904 in 1942 to 2,392 in 1953 to about 4,000 in 1963. The entire university population in Indonesia in 1940 consisted of 585 students; Gadjah Mada University alone has grown from 387 students in 1947 and 6,529 in 1953 to its present enrolment of almost 17,000. During the period from 1947 to 1963 student enrolment at Rangoon University has increased from 2,636 to about 13,000. In the years to come, these figures will increase and the human beings which the figures represent will form the bulk of the carriers of public opinion of the country. Technologists, administrators, politicians, journalists and teachers will come almost entirely from this pool. Their outlook and qualifications are obviously of the greatest importance for the future of their countries. Yet they are being allowed to stagnate and fester.

I V

The causes or conditions of student unrest fall into four general classes. These may be classified as follows: the cleavage between generations, the absence of authoritative models of conduct, the restricted range of opportunities for achievement and conviviality, and the scarcity of socially and economically rewarding opportunities for employment. My observations about these factors were derived primarily from data gained by questionnaires and interviews and from my observations as a teacher and a research worker at universities in Burma, Ceylon, Thailand, Indonesia and India between 1954 and 1958 and from 1960 to 1962.

In underdeveloped countries, in which traditional systems predominate but where drastic changes in social structures are occurring, the gulf between the older, less well educated generation and the younger generation in attendance at universities is much wider than it is in countries where, whatever the differences in education, there is more of a common moral culture shared by less educated parents and their highly educated offspring. University students between the ages of 17 and 25 represent that group in underdeveloped societies which is most exposed to the institutions and beliefs of modernity and which is in many respects most responsive to it. It is the students who study foreign languages, read foreign periodicals and meet foreigners. The ideas they encounter in their studies come from a very much wider world than that in which their parents live. Their lives as students are hard. Many of them are poor. They live scantily, they have poor places to study in, poor recreational opportunities. Poverty and boredom accentuate the normal intergenerational strain.

During the colonial period of higher education when entry into universities tended to be more confined to the offspring of already more modernized and educated classes, fathers and their eldest sons held relatively similar views about the world. Since many Asian countries have become independent it has been possible for the younger sons and even some of the daughters of such families to go to the university. But more important it has become possible for the offspring of clerks, small traders and occasionally even peasant cultivators to go to university. Moreover, young men who under normal conditions would have been under the domination of quite authoritarian family systems now find themselves at the university, relatively free from that authority simply by being some distance away and immune from its controlling scrutiny; they are now at large in a type of institution and ecological environment which is new to many of them and at which their behaviour is relatively uncontrolled. The universities have no way of supervising their pupils—the staff are overworked as it is.

This emancipation from the familial authorities under whom they grew up goes hand in hand with a tendency to look critically at all authority and to regard its demands as oppressive. The emancipation from familial authority extends to the refusal to accept institutional and political authority as well. The elites of the new

states, even though they were once revolutionary students, are now middle-aged and even old men. They certainly appear old—like parents and teachers—and to the young student they come to share in the opprobrium which, in their view, the aged and repressive parent is accorded. They belong to the 'established authorities'; they are thought to be on the side of oppression, of officialdom; they are remote. The order of things which they represent does not recommend itself to young persons in process of education and emancipation.

V

There is a further reason, also due to the separation of the youth from the traditional pattern of authority, which contributes to explosive restiveness.

In the traditional sector of the Asian and South Asian societies in the past, adolescents and youths tended to be heavily impregnated by exemplary moral authority. By identification as well as by precept, a young person learned what constitutes the good life, what makes the wise man and what knowledge is necessary for an appropriate place in the society. The teacher or *guru* or *bhikkhu* or *'ulama* was such an exemplary moral authority. He was a man of religion and of wisdom; both the spiritual and the earthly were his domains. The evidence of his spirituality and his knowledge lay in their application to his own life. His conduct was his legitimation. The master-disciple relation between teacher and student in traditional Asia enabled the young to model their own existence upon that of their teacher. This model was a mentor and a guide; these exemplary teachers exercised great influence upon the young in Hindu, Buddhist or Islamic societies. The coming of European culture and the establishment of a secular university education destroyed this rule. Religious knowledge and experience were absent from the educational curriculum in universities, except as objects of scholarship in the Western style. The teacher became simply a teacher; his subject was the extent of his responsibility; his diffuse moral influence was not integrated with his specific responsibility as a teacher. The other responsibilities which were sometimes officially imposed on the teacher were separate things: the supervision of games or wardenship of

hostels was specific. They had no diffuse moral overtone. There were of course university teachers who were different from the prevailing pattern. There were charismatic personalities, men who cared for their pupils, but they were rare.

This has all taken a turn for the worse with the great expansion of the university student body and the sharply upward movement of the student/teacher ratio. For example, at Gadjah Mada University in 1960 there were 145 professors and lecturers for 13,139 students and of these 145 no more than 60 per cent were in residence on the campus, and over 20 per cent held more than one teaching position. At Rangoon University the student/teacher ratio in 1962 was estimated at about 200 to one. In the Philippines in some private secular universities in Manila the ratio may run as high as 300 to one with only 20 per cent of the faculty in residence. Under such circumstances personal contact between the university teacher and his students has become rarer than it was. Teachers do not have much time even if they have the inclination. Many of them must pursue other employment in order to supplement the small income which they get from teaching. They do not have rooms where they can receive students. But even if they had more leisure and more inclination, there would still be too many students.

The poor conditions of life and study into which the students are thrown, the need to read in foreign languages in which they are not fully at ease, the all-governing importance of performance in examinations—all these make the university a distressing place to be in; yet it is one which has an irresistible attraction. Being there is, at the same time, irresistible and intolerable. The university authorities and teachers become the focus of the resentment which these conditions generate in the students.

V I

The situation of the students is rendered more difficult by the deficient opportunities afforded for harmless pleasures in the universities, in the towns in which they are situated and by the societies of which they are part.

In most Asian societies young people today have, as never before, become conscious of themselves as individuals. The growth

of individuality has been one of the unintended consequences of nationalism, urbanization, industrialization and the impact of mass media. The individualization of aspirations for achievement, for pleasure, for conviviality has become marked. The university is now the condition and the barrier to the realization of these aspirations which are now held by far more young persons than ever before.

The student of a South and South-East Asian university is now in a position in which he must 'succeed'. This is something new in the culture from which he has come. The student who fails at university is a failure in life since the certification of the degree is necessary for employment by a public body. (He is also a failure in the eyes of his kinsmen and the people of his village or district since they set very great store by his satisfactory progress toward the degree).

Of 2,000 students in Indian, Burmese and Indonesian universities who were interviewed or who replied to a questionnaire, 60 per cent were primarily concerned with their chances for successfully completing their university studies. Yet the realities of the system in most Asian universities frustrate even the most zealous students, and those whose will to study is weaker are discouraged all the more easily. Much of the frustration grows out of shortages—books, library seats, teachers, laboratories, classrooms, residential accommodation. Many of these deficiencies are functions of economic backwardness and their solution will depend on economic growth. Some of the irritants and obstacles which trouble the students, however, are the result of institutional traditions which could be modified by determined action more easily than the less remediable shortages of resources.

The university system in most Asian universities is outmoded and unrealistic in the face of exploding populations and pervasive commitments to mass education, to say nothing of the tasks which the elites of these countries claim they wish to face. The examination system is one instance of a practice which has been unthinkingly adhered to and which has pernicious effects. The oral examination which is practised in so many Indonesian and Indian universities is impossible to administer objectively where student/teacher ratios are 200 to one or more and where one third of the staff is inaccessible to the students. An academic system which

grants great latitude to the students to request re-examination helps to produce chaos in universities where the enrolment is 5,000 or more and where constant changes are being made in requirements. Five hundred students in an Indonesian university were asked to estimate how many more years it would take them to obtain degrees. More than half of them said they did not know. These students had no way of determining where they stood; the requirements which governed their study were vague and indefinite. Oral and written examinations, term papers and lists of books to be read (often in three or more languages), standards varying from teacher to teacher and from department to department, the intrusion of extraneous criteria in determining academic success—these and more are part of the disorder that confronts and frustrates the students' progress through the university. The traditional European view that students are mature enough to be given the responsibility for the allocation of their time, that requirements should be set down only for large blocks of time, and that performance in a few examinations set once a year, or every two years, or even at the end of the entire university course, should be the only measures of success, has in the present-day Asian university resulted in much disorganization among the students.

Alienation from the university system is, of course, the natural result of such conditions. The alienation is reflected in the relative unimportance which students accord to genuine intellectual achievement and in the rarity with which intellectual curiosity, or intrinsic interest in a profession, is aroused among them.

The absence of conditions which might awaken intellectual passion only aggravates the effects of a parallel restriction in opportunities for the pleasures of conviviality. University students have been introduced to ideas about a freer contact between male and female and have sometimes verged on relationships with the opposite sex which are antithetical to the traditions of their own societies. The mere presence of young women, unrelated by kinship, in situations unprovided for by the indigenous culture arouses erotic interest. The experience of films, books, journals, newspapers, radios and foreigners fosters phantasies and desires that cannot be fulfilled in most Asian educational environments. Since most Asian universities are not physically isolated from all traces

of local indigenous society, indigenous traditions still weigh upon the student; they are not strong enough to suppress what they forbid. Moreover opportunities are in no way proportionate to the new desires. In a series of samples of over 1,500 students in four South-East Asian universities who were asked: 'What has been the most serious personal problem which has adversely affected your university studies?', over 80 per cent answered: 'troubles with the opposite sex'. This did not mean troubles with females with whom relationships had been established but rather the inability to initiate any relationships at all with them. The stories are legion of Rangoon University male students who for months, follow, from a distance, female students they admire in the hope that somehow they might be introduced to them. The initiation of the faintest and least erotic heterosexual relationships in Asian universities is hampered by inhibition and uncertainty. Many an Indonesian female student has been confronted by university youth who has never uttered a word to her until his proposal of marriage. It is hard to imagine relationships between members of the opposite sex in which there is a greater discrepancy between the desired and the actual than those taking place in Asian universities. The liberating theories of sociology and psychology and the impact of foreign media of communication have served to deepen this gap. The sexual propensities of university students in South and South-East Asia are stimulated on the one side and either repressed or distorted on the other. At a meeting of the World Health Organization in 1962² a marked increase in venereal disease among Asian university students was reported. Inasmuch as any fruitful relationships between the sexes, regardless of their intensity, duration and quality, which go beyond sitting in the same classroom or bus, etc., must be conducted clandestinely (and privacy is hardly possible in Asia) the consequences and ramifications are bound to be unsatisfactory to the participants and disturbing to their elders.

It must be remembered that the separation of the sexes is characteristic of most secondary and some public schooling in Asia. This circumstance and prevailing family social codes mean that the university presents youths with their first opportunities for

² *Student Health in Asia*. Report of a meeting held in Ceylon, April 1962 (World University Service).

being in the prolonged presence of young women who are not members of their kinship group. The existence of student unions and various other social clubs and groups serves to increase contact and heighten desires while offering few opportunities for even very mildly erotic satisfaction such as talking privately to a young woman. The distractions and torments of this combination of excitation and frustration undoubtedly interferes greatly with the students' academic performance, increases their touchiness and confronts university authorities with situations with which, given their present attitudes, they are hardly ready to deal.

One of the few areas where students can find some socially acceptable opportunities for emotional expression is in games and sports. However, even here, existing facilities in Asian universities are far short of what is required. University officials and ministries of education are loth to invest in swimming pools, gymnasias and sports fields when there are shortages of books, classroom, library and laboratory space and inadequate salaries for teachers.

The opportunities for the students to engage in extra-curricular artistic and dramatic and literary activities are also very meagre. Asian universities have been very backward in providing for student interest and activity in art, drama, dance, music and literature. The interest of Asian students in traditional and modern arts is really quite extraordinary. The number of Indonesian students skilled in the manipulation of shadow puppets and Indian students skilled in the drum, is large. In addition, a sizeable number of students are interested in modern painting, drama and literature. Despite this there is a general lack of interest among university administrators and teachers in encouraging such cultural pursuits. The university tends to regard cultural activities as only fitting for academic study and even here the feeling is that the provision for such subjects as music, dance, painting and drama is a luxury that underdeveloped societies can ill afford. Students, however, seek cultural activities as a means of self-expression; they wish to participate as performers and spectators and have little academic interest in such matters. Funds for cultural activities have to be solicited by the students themselves. Eventually the effect of this is to dampen enthusiasm and eliminate yet another possibility of satisfaction for students.

Opportunities for free ranging political discussion are likewise

constricted. In Burma, Thailand and Pakistan the boundaries of any type of political discussion are set by military governments. Student activities which touch on politics are permitted only when they are consonant with views of the military elite; they are encouraged only when student groups can be exploited by political parties such as has been the case in Indonesia, Ceylon and India. The occasional involvement of the students in politics is considered inherently oppositional by the incumbent political elite and therefore dangerous to its security of tenure. In Burma, the once powerful student associations, because they still took an interest in politics, were deprived of their power by the most drastic procedures. Indonesian university youth groups are permitted to express themselves about political matters only to the extent that they are in agreement with President Soekarno's party and the military group which cooperates with it. In Thailand political action among university students is practically prohibited. In Ceylon communal dissension between Sinhalese Buddhists and Tamil Hindus has aggravated student conflict but has narrowed the scope for moderate political attachments.

There is little ease or richness of life for the university students under prevalent circumstances. Students ill-qualified for intensive intellectual exertion and hampered in the pursuit of beneficial routines seek their cultural and intellectual gratification in films and reading the thinnest of novels and stories. A sample of Burmese and Indonesian university students revealed, for example, that more than half spent more of their time at the movies than in the laboratory and library.

Under such conditions, some of the university students who either have no pleasure in their studies or who are even bored and bewildered by them and who are still not completely demoralized, will turn more and more to bitterly alienated groups. The student political groups that are permitted in Ceylon, Burma and Pakistan—in India there are no prohibitions—largely devote themselves to unrealistic and irresponsible agitation, others less formally organized lead or lend themselves to the disturbance of the peace of the university.

VII

The poor prospects of employment following the degree are fundamental to the insecurity of the university youth. Since the intellectual and humane values of education do not interest most of the students and the pursuit of learning is rare, the dim practical prospects further the demoralization and alienation of the students. Considerations of status, prestige, occupational security, personal political power and some vague sense of entry into a charmed circle centring around governmental power motivate a majority of those who participate in the higher educational system. Few aspire to enter an occupation of their own choice. Occupational preferences are traditional and they are not ordinarily determined by individual aptitude or deliberate choice or a realistic view of employment opportunities or the needs of their society. Law, the liberal arts and medicine dominate the higher levels of education. Even the chances of entering an uninteresting but dignified post seem to be diminishing as the number of students increases while the economy moves forward at a much slower pace.

In many Asian countries, particularly in India, Japan and the Philippines, the absolute demand for highly qualified technicians and technologists is quite high. There are, in addition, considerable opportunities in the private sector of the economy. However, Asian university students generally still seek government employment; indeed in many of these countries there are, in fact, few opportunities outside the government. However, it is not just the fact that the preference for government service predominates but rather that the vast majority seek *administrative* positions. Administration is, in their minds, synonymous with power, with security of tenure and certainty of advancement, and with the most gratifying position in the world—namely, proximity to the centre of society.

It is, of course, true that efficient administration is vital to Asian development, but the hunger for administrative employment has not resulted, as it did in colonial times, in producing an effective bureaucratic cadre. It has instead resulted in producing an overpopulated class of indifferent administrators and a system which generates standards leading to much waste of valuable talent. For example, engineers, chemists and economists prefer to

be administrators while leaving complex technical tasks to individuals who have had little specialized training. Surveys made of the activities of elites in Thailand, Burma, Indonesia and India indicate that in some fields as many as 60 per cent of those trained are not using their skills or the specialized knowledge which university training has given them. In Thailand a survey made of 125 chemists of whom 85 had foreign degrees indicated that slightly more than half were serving as administrators in positions totally removed from chemistry. In Indonesia a study made by the writer of the first 900 alumni from all faculties during 1952-60 from Gadjah Mada University showed that of the 85 per cent who entered government service, some 70 per cent were working as administrators in fields in which 45 per cent of these graduates had not received training. To the extent that this is a matter of choice and not of necessity, it reflects, for a considerable number of graduates, a lack of genuinely professional orientation. It is an attitude which appears to have been nurtured by the universities as well as by the semi-modern traditions of colonial societies which accorded primacy to government employment regardless of its vocational content.

The incidence of unemployment among Indian university graduates was severe already before independence. In the other countries which had very small university student bodies or none at all, it was not a pressing problem. Then, after independence, those countries, Indonesia for example, which had no indigenous higher civil service before independence and in which there were no more than 1,000 people with higher education out of a population of 60,000,000 in 1940, were at first able to absorb all their small output of university graduates. In the latter countries, too, the situation is beginning to move toward the Indian pattern.

VIII

In underdeveloped countries where skills are scarce, authority unstable, and economic pressure enormous, the products of the universities have a crucial role to play. They are the generation with the least commitment to maintaining the *status quo*; they are the least vulnerable to political control and military force; they are the most impressionable, the most energetic, the most secular,

the least traditional, and the most uncommitted group in Asia. They are relatively indulged by their societies. They could become the catalytic force in generating change and in demonstrating the extraordinarily beneficial consequences that can accrue to a society from reasonable self-sacrifice. But their energies are being dissipated and their talents are being left uncultivated. When they do organize politically they tend to remain outside the process of civil politics, and their role tends to be destructive. Those who might perform useful services to their societies are either thwarted by a resistant academic system, by unsympathetic political and military elites, or by the binding and often frustrating traditions of their families.

Student problems are amenable to solution. Asian governments and their universities have a number of opportunities to bring higher education into line with the demands of the nation and the needs of the individual. To accomplish this, however, education cannot remain what it is at present—the least planned and least evaluated sector of national policy. Entry into the higher levels of the educational system can and must be regulated on the prospective demand and the likelihood of outstanding performances. Control over the flow of students to different faculties lies within the present capabilities of most underdeveloped Asian states, yet very little is being done. Indonesia has established a Ministry of Higher Education but has no plan for control and development of its universities. The new policies of the military in Burma have been directed at preventing any activity by politicized students rather than reforming the university system. In the Philippines an attitude of complete *laissez-faire* exists towards the universities. Only in Thailand and Malaysia have some constructive efforts been directed towards limiting enrolments, and towards making higher education somewhat more consonant with national needs. The state has the means, via scholarships, subsidies and differential salaries, to influence occupational preferences. Governments can encourage and sponsor the development of needed skills and can alter the traditional pursuit of administrative positions. Relatively reliable measures and standards of achievement can be developed. Technological performance can be emphasized and differentially rewarded. The academic system can be revitalized. The talents and energies of educated youth can

be rendered beneficial to society and yet satisfying to the individuals involved. The universities and their graduates could then turn out to be the most efficacious of all the available agencies for affecting the magnitude and rapidity of economic and social growth to which most underdeveloped nations have committed themselves.

THE IMPACT OF FOREIGN STUDY: THE INDIAN EXPERIENCE

AMAR KUMAR SINGH

FROM RAJA RAM MOHAN ROY (1772-1833), a vigorous advocate of the Western system of education, through Tagore, Gandhi and Nehru, to the present generation of Indian students in Indian as well as in Western universities, Western education has been, perhaps, the most important factor conditioning the attitudes of modern Indians to their way of life. Western education, indeed, has been the main impetus of social change in modern India and the Western-educated Indians the main agents of a revolutionary change such as India had never encountered before in her long history.

The contributions of Indians educated in the West, to the making of modern India, their leadership in political as well as in social, administrative and technical spheres, have been well established. The number of Indians educated abroad and the area of their influence have been increasing steadily through the years. According to *The Cambridge History of India*,¹ there were probably not more than one hundred Indian students in Europe before 1880; there were about 3,510 in Britain alone during 1959-60,² not counting a large number of students not registered with India House but taking examinations conducted by private institutions; and about six thousand Indian students are now studying in America.³

The number of Indian students going abroad has increased since Independence. This increase is in part a result of the great

¹ Dodwell, W. H. (ed.), *The Cambridge History of India* (Cambridge University Press, 1932), VI, p. 354.

² Committee of the London Conference on Overseas Students (c/o The British Council, London, 1960), *Overseas Students in Britain* (Revised Edition), p. 17.

³ Bhatia, Prem, 'Indian Students' Problems (A Letter from Washington),' *The Times of India* (24-3-62).

increase in opportunity for educated Indians in governmental and para-governmental bodies; it is also a result of the increased number of scholarships and grants by Indian and foreign governments, universities, and related institutions. In the past, those sent abroad for higher studies came primarily from or were sponsored by the richer section of the Indian population, namely civil servants, businessmen and landowners who believed in the superiority as well as in the social and economic advantages of foreign, particularly British, education. This group still exists and contributes to the flow of students, but it has been very far surpassed by the offspring of persons of middle and lower middle-class status. Both parents and offspring consider the foreign degree the great social elevator, a passport for the entry into the élite; it offers a hope and a promise to free themselves and their families from poverty and from social insignificance. This is particularly true of persons from lesser castes. It represents an entry, or at least a promise of entry, into a superior form of existence. The very fact of studying abroad is a step towards this superiority. It is for these prospective advantages—intellectual, pecuniary, social, moral, almost metaphysical—that so many young Indians are willing to undertake so many inconveniences and to subject themselves and their families to acute, though temporary, financial and emotional hardships. The present generation of Indian students abroad, being typically the first members of their families, or may be even of their local communities, to go abroad, make this a great event, and a topic of proud reference; their relatives promptly pay the local newspapers to publish their photographs on the eve of their departure. Some of them are lucky enough to get scholarships. Since there are relatively few scholarships in relation to the large number of aspirants for study abroad, some obtain partial grants or loans. A large number of them scrape together all the resources of their extended families to meet the heavy expenses of foreign education; and some, indeed, spend more money on themselves alone than the expenses of their entire families in India—who, already deprived of the student's earnings while he is abroad, have the added responsibility of supporting his wife and children who are usually left behind. Many of them sell a piece of land or postpone the marriages of their sisters, or pawn the ornaments of their wives, or borrow from relations and friends, or just leave on

the strength of enthusiastic promises and warm assurances of help which are forgotten or become difficult to keep as time passes. Occasionally, some resources are found in what remains of the marriage dowry after the unreasonable waste of the elaborate ceremonial.

In contrast to these persons from the middle and lower middle classes, there is a smaller group, the members of which come from the upper strata of Indian society, from families who in the last few generations have sent their members to public schools, British and Indian, and to British universities. These families are rich, educated, socially well settled, and well connected. The students themselves do not have the problems and worries of so many of the Indian students abroad. They are more sophisticated in general and more at ease in foreign countries, particularly in Britain, than the majority. The differences between the mass of the Indian students abroad and this minority are many and it is rather difficult, and may be misleading, to treat their problems and attitudes as if they were all identical. Of course, there are some common trends, and I shall try to point them out while discussing the effects of foreign education on Indian students.

Effects of Foreign Education: Changes in Attitudes⁴

The Indian student going abroad, even after having taken his first degree in India, is on the whole fairly ignorant of Indian society and Indian cultural traditions. It is in part an ignorance

⁴ The data on this subject are drawn from the following investigations: Singh, Amar Kumar, (i) *Indian Students in Britain: A Survey of Their Adjustment and Attitudes* (Ph.D. Thesis, London University, 1961; to be published shortly by Asia Publishing House, Bombay); (ii) *Indian University Students in Britain* (London, Political and Economic Planning, 1961); Coelho, G. V., *Changing Images of America: A Study of Changing Perceptions of Indian Students* (Glencoe, Ill.: Free Press, 1958); Lambert, R. D. and Bressler, M., (i) 'The Sensitive Area Complex: A Contribution to the Theory of Guided Culture Contact,' *American Journal of Sociology*, 1956; (ii) *Indian Students' Project at the University of Pennsylvania* (mimeographed, 1953); Useem, J. and Useem, R. H., *The Western Educated Man in India* (New York: Dryden Press, 1955); Shils, Edward, (i) *The Intellectual between Tradition and Modernity: The Indian Situation*, 'Comparative Studies in Society and History', Supplement No. 1 (The Hague: Mouton & Co., 1961); (ii) 'Indian Students,' *Encounter* (London: September, 1961).

characteristic of adolescence and in part a result of the narrow range of experience of young people in India and their sheltered existence within their families. This was true even of the earlier generation of Indian students who came from more worldly and educated families. The sojourn abroad provided the Indian students with an opportunity of first-hand acquaintance with a social system, a political life, administrative machinery, academic institutions, intellectual orientations, and a way of life very different from the one they had known so far. It also stimulated them to compare the social institutions, values, and national characteristics of the West with those of India in a more realistic way. In the course of this exposure, many of them indeed developed more balanced and more differentiated impressions of the Western countries and of India.

Most recent studies of foreign students have refuted the naive view, which used to be common, that Indian students cease to be Indian if they study abroad. On the contrary, these studies suggested that foreign study made them more Indian in an important way; it heightened their sense of nationality and intensified their bonds with their native country. For example, almost half the Western educated Indians in the Useems' sample 'intensified their orientation to India while they were abroad.'⁵ Most of them felt that they had, as it were, discovered India while they were abroad. My own survey of the Indian students in Britain also confirmed this tendency. Seventy-five per cent of the students had felt that Indians became more 'Indian' by coming to the West. This discovery of India while abroad occurred in an interesting, if painful, way. The discovery was a twofold one. It was a greater awareness of Indian realities and a greater attachment to India as such. Very few Indian students had any close acquaintance with Indian society, and its history, philosophy, religion, literature, sculpture, painting, dance and music before they came to the West. Their physical separation from India and from their families, caused them to feel more acutely that from which they were separated. By some process of generalization, they felt separated not just from their particular families and environments but from something simply Indian. They became more aware of being Indian because the people around them in their universities, etc.,

⁵ *The Western Educated Man in India* (1955), p. 57.

treated them as Indian. With great embarrassment they discovered their ignorance and even their previous indifference when they met inquisitive people in the West who seemed to know more about India than they did themselves, or when they were asked by some organization to give a talk on some Indian topic. This realization was naturally shocking and hurt them and made them intensely motivated to do some serious reading. A typical answer of such a student in Britain was:

I am ashamed to confess that I had not read even the autobiography of Gandhiji. I had only heard of Nehru's *Discovery of India*. I used to ridicule the scriptures, epics and ancient literature of India for being old-fashioned. I have read them here for the first time and they have given me assurance and strength. I have greater confidence today in the way of life called ours. I have realized that we are, after all, no beggars. The West has to teach us many things. But everything in the West is not superior and correct, nor everything in India inferior and wrong. I have learned to love India after coming to Britain.

The national identification of Indian students was also heightened by the prosperity, high standard of living, opportunity for work, creativity and efficiency of the Western countries, they saw in painful contrast to the poverty, misery, ill-health, illiteracy, backwardness and general disorganization, laziness, apathy, indifference and irresponsibility which they perceived as characteristic of India. They felt a sense of shame, perhaps even of guilt, for the backwardness and poverty of India, for the ill-fed and ignorant millions of fellow-Indians. Political clichés about imperialism as the source of Indian miseries fell away in the course of the development of a more differentiated image of their own country. It was not easy to explain Indian poverty simply by reference to British imperialism, and especially against the ostensibly rapid progress of China which started late and with no obvious advantages. This increased intimacy of understanding of their own country and their concern about aspects which had not stirred them previously, increased their sense of identity with India. They tended to become more ashamed of India, more desirous of being proud of India.

Added to these was the factor of distance, which enabled them to see India in a new perspective, see her as a single nation, with an identity of her own, with a distinctive culture and a way of life. They lacked this vision when they were in India, for they were then too much absorbed in their day-to-day routine problems and local, communal and, at best, regional attachments. Many Indians for the first time met on an intimate level, Indians from other parts of their country than their own, and found an opportunity to understand them. It was in the Common Rooms of Western universities, in the hostels and digs of a foreign land that Indians from South and North, experienced a sense of affinity with other Indians *qua* Indians. Not only this, many Indians and Pakistanis, particularly persons from East Pakistan and West Bengal and from West Pakistan and the Punjab, sadly realized the absurdity and tragedy of an artificial partition of a culture and a way of life.

This increased sense of nationality did not then lead to an uncritical and undifferentiated ethnocentrism. There is, however, a tendency in the Indian students, once they have 'discovered' India, to exaggerate the spirituality of India. The contention of the superior spirituality of India has, of course, for a long time been the stock in trade of Indian critics of the West and its impact on India and the argument has been shared by Western critics of the West and admirers of India. The fact was that most of the Indian students admitted that they wanted a foreign degree for quite secular reasons. For some, no doubt, their spirituality was an intellectual conviction, but for many it was merely an unthought-out cliché. To some extent, it is a result of the feeling of national inferiority, a defence mechanism, against the superiority of the West in earthly things and a sort of apology for Indian poverty. Professor Shils, I think, is right to suggest that the 'sense of national inferiority underlies the clichés in praise of India, which Indian intellectuals often put forward in public and which seldom find expression in private conversations—which are much more observable in Indian intellectuals abroad than in Indian intellectuals in India.'⁶

Interestingly enough, this enhanced sense of their Indian identity did not lead to xenophobia. On the contrary, the ease with

⁶ *The Intellectual between Tradition and Modernity*, p. 76.

which they came to associate as equals with British, American and African friends gave them a greater appreciation of these other societies and cultures, particularly those of the country in which they were studying. It is significant that many Indian students found much more in common with their British, American and African friends, sharing the same social and political values and general outlook on life than they had with some of their relations in India.

The things which impressed the Indians most in the Western countries were the efficiency, creativity, serious attitude towards work, honesty, sense of responsibility, generally cordial and helpful relations to colleagues and others, respect for the opinions of others, non-interference in professional as well as in personal life. These things were generally seen to be in sharp contrast with the existing circumstances in India: the disorganization and wastage, favouritism and nepotism, patronage of the unworthy, indifference towards work, petty jealousies against colleagues, intrigues and manoeuvrings for professional success, bad tempers and authoritarian behaviour towards junior colleagues. The following extracts from the interviews with Indian students in Britain will illustrate this viewpoint:

Things run smoothly in this country. They have organization and efficiency. They know they are paid for their jobs, and they do them. In India, even when someone is performing his duties, he thinks he is doing a favour. Here you write to an organization or persons, you get a prompt reply. In India (including India House in London) no one cares for your inquiries in spite of many reminders. A routine job is not done for you unless you please everyone from the peon to the Bara Babu (senior officer). Here in the libraries, they help you find the book; if the book is not available, they borrow it from another library or purchase a copy for you; in India you just have to come back if the book is not on the shelf or forget about it. Here they trust you; you get your cheque cashed at the bank counter; in India you have to wait for hours to draw your money, because they would not pay you without checking your accounts and, no doubt, they are wise in doing so.

I have never been able to convince my milkman in India

that I like a cup of tea in the morning to begin my work and I like it with milk. Nor have I been able to convince my paper-vendor that the morning paper loses its worth by the evening. Nor have I been able to convince my washerman that I have only a few shirts and that if he does not bring the laundry on the appointed date, I find it inconvenient to go out with rather dirty shirts.

Academic Achievement and Professional Outlook

In India, very few university students had the opportunity to come into personal contact with sympathetic teachers capable of creative work; such teachers are extremely rare in Indian universities.

Despite this, Indian students who are capable of hard and persistent work and who are responsive to conscientious teaching are not rare and have had respectable academic achievements in the Western universities. Their academic success and the recognition of their merits by Western teachers gave them a sense of confidence; it also gave them some sense of the satisfaction which can come from good work and of the high value of creativity in science and scholarship. Many of the Indian students were greatly inspired by the examples of their Western teachers and developed a strong identification with them.

It is, therefore, not surprising that the Indian students found their 'gurus', not in Indian but in the Western universities; the Western teachers fitted into the image of the traditional 'guru' more aptly than the Indian teachers. During the two or three years of his sojourn the average Indian student gave himself entirely to his studies, free from the interferences and distractions he suffered in India, worked under the best guides and with facilities much superior to those he would have in India. As a result of this, the course of study on which he had entered for mundane or very vague reasons became something of very great intrinsic importance to him.

In Indian universities research-minded teachers are too few to develop on a large scale any awareness of research among their students. This was borne out by the fact that many post-graduate students, themselves teachers in Indian universities, had come to the British universities with an ambition to obtain a Ph.D. degree

but without any proper training in research methods or an understanding of how one goes about a piece of research. Often a student with only a routine intention of taking an advanced degree becomes, for the first time, attached to research and acquires a richer understanding and appreciation of its meaning and importance. With their training in the Western universities, some of them become devoted to the idea of a career in research and wish to be able to follow such a career. Among the latter, some, despairing of the prevailing atmosphere in India, later decide to stay on in the West—most of them unhappily—or to prolong their sojourn abroad as long as possible.

Foreign-Returned

Those who return to India usually return with some confidence that they will be able to avoid the obstacles of which they have heard. The return is both a gratification and a shock to them. Their countrymen give them envious respect for their foreign experience, especially if it is British. Their countrymen are, of course, pleased by the respect that the 'foreign-returned' Indian shows towards Indian civilization, religion and traditions; it somehow comforts them for their lack of foreign experience and makes them feel that after all living only in India has not been such a bad thing. Ignorant of Indian history, never having done any serious reading, conditioned by shallow and enthusiastic patriotism, living on a few fragments of Indian civilization, they fail to understand the true nature of the Western educated Indian's respect for Indian tradition and religion, which refers more to fundamentals than to particular rituals and customs. This leads to misunderstandings, to perplexity and discomfiture on both sides. The net result of this is an ambivalent attitude both on the part of the Western-educated Indians and the rest of the Indian people towards each other.

The main dissatisfaction of Western-educated Indians is not about religion or such social institutions as the joint family, arranged marriage, or even the caste system; though, no doubt, they are aware of the suppression of individual initiative by the joint family, the absence of understanding between husband and wife in arranged marriages, and the powerful human barriers inherent in the caste system. But these are not the things they so aggres-

sively attack; their displeasure is directed more against existing social practices and customs; nepotism and corruption in public organizations and government; poverty and low standards of living; waste and dishonesty; low morality in commerce; red-tape and bureaucratic delay; the discouraging and obstructive attitudes of senior persons in positions of authority; the general inefficiency, lethargy and disorganization permeating all spheres of social and political life, and the absence of social justice and individual dignity. They are reluctant to become immersed in this slough of despond for they have seen a better social life, a more dignified way of living, more creative and more fruitful, and they believe that there is no reason why Indian society cannot be so. For many, however, this sense of revolt is only very short-lived, and soon they end in bitter and frustrating submission. Social arrangements and traditions, powerful persons at the top, vested interests, and the unrelenting demands of life—security, income, promotion, status, maintenance of the extended joint family, etc.—prove too overwhelming to resist. Psychologically this submission to things they hate, creates in them a helpless sense of humiliation and unworthiness, for they feel themselves to be making a shameful compromise. They often feel they have betrayed their better selves, killing that part of themselves of which they have been so proud and which seemed during their period of enthusiasm abroad to give life dignity and purpose.

This is a painful situation which manifests itself from time to time in such an extreme form as the suicide of Dr Joseph, a Ph.D. from an American university, who had to work in a very low-paid post, who was under pressure to repay the money borrowed for foreign study, and whose applications for permission to transfer to posts with higher salary were not forwarded by superior officers. Another indication of the situation which the returning scholar or scientist faces in India was recently disclosed by the resignation of Professor J. B. S. Haldane from the Council of Scientific and Industrial Research, the Government of India organization for the coordination and support of scientific research. Professor Haldane had come from Britain to settle in India after the Suez operations, and everyone in India was proud of having such an eminent foreign scientist become an Indian national. Professor Haldane resigned because he felt that he could not associate

himself with laziness, for since his appointment in 1961 as Professor-in-charge of a new research unit in genetics and biometry he had not been able to do justice to his work. He had failed to secure the cooperation of the Government; he could not get proper accommodation for his office and his laboratory, nor was any accommodation available for his staff; he had to convert his spare bedroom into his office; the condition of the building had been deteriorating without repairs and rain came through the roof: 'This is entirely', Professor Haldane has said, 'typical of the official treatment of scientists in India. It is the intolerable conditions imposed by bureaucrats and not the low salaries or the lack of equipment which cause so many Indians to take up posts abroad.'⁷ If this may happen to persons to whose demands the Indian scientific authorities would be much more attentive than they would to the aspirations of less famous scientists, one can very well imagine the condition of those less famous Indian scientists and scholars. It is no wonder that lecturers in the universities lose their interest in research. Nearly everything seems to conspire against them and even if their own conditions of work are more favourable, they are nonetheless still affected by the prevailing atmosphere of depression, hopelessness and sloth.

It is generally agreed (though nothing is done about it) that one of the reasons for the sad state of affairs in the Indian universities is the influence of politicians as members of the Senate and the Syndicate, and as Vice-Chancellors and Chancellors. The teacher-politicians find encouragement from the professional politicians, and the university is divided into factions. The scandals of academic intrigues provide an outlet for the frustrated ambitions and embittered emotions of the neglected teachers. The young man coming back full of ambitions from a Western university, from which such preoccupations were absent, is dismayed. Coming from an atmosphere which he perhaps idealizes retrospectively, impregnated with scholarly and scientific zeal, what so often strikes him most forcibly after a time in the Indian university is the disregard for scholarship and learning. It is likely that he exaggerates this disregard somewhat, but there can be no doubt that he believes in its reality and is distressed by it.

He sees senior teachers who some few decades ago had done

⁷ From a letter of Professor Haldane, *Blitz*, 30 June, 1962, Bombay.

some research at one or another Western university, the only research of their lifetime. Since then they have done nothing. They do nothing to help their junior colleagues to take up research or to improve their teaching; even worse they often create positive hindrances since they feel somewhat insecure before the oncoming generation. They themselves, with only a few score outstanding exception, devote themselves to university politics and administration.

Thus for a great variety of reasons the Indian scholar and scientist who has just completed his advanced training is thrust into a university situation which is very discontinuous with what he had been doing previously and with what he wished and expected to do. For some, this is an economic necessity. There is little effective demand for certain highly specialized scientific skills so that the person who has been trained in them finds on his return that to survive he must change his profession in significant respects. For many others the response is more voluntary. They try to leave the path to which they once aspired and enter on the time-honoured path of Government service, where there is at least a chance in Delhi or Bombay of stimulating companionship, a higher salary and the sense of serving the common good. To this should be added the greater prestige of Government service.

The Western-educated Indians on their return face serious problems in their domestic life as well. The most crippling, perhaps, is the task of adjustment and understanding in relation to their wives. Many of the Western-educated Indians have wives who did not accompany them to the West during their period of study. The intellectual gulf between them was already wide before they left; the foreign education of the husband widens further this gulf. When they return they find re-entry into the relationship something of a strain. Their relationship, perhaps, hangs only on cold sex and enlightened compassion on the part of the husband; culturally they are strangers to each other. The wife, no doubt, gives the traditional devotion and loyalty of an Indian wife; she worships her husband without understanding him; and the husband is irritated by the thought that she would have shown the same attitude if married to someone else. While he wants to be understood as an individual, he is worshipped as an institution; and as a result both are disappointed. Then, again, there are the

financial burdens of the extended joint-family, congestion, absence of any separate study room, not to speak of a personal library; guests and relations who demand his entire leisure time, and visitors who come in at any hour without appointments and stay on until one has spent all his energy and time, add to the distractions of domesticity.

Prospect

All these experiences entail much pain and unhappiness and they represent as well a very considerable loss to the nation. So much foreign exchange, so much 'technical aid' in the form of scholarships, stipends, etc., is squandered when skills acquired by foreign training are allowed to deteriorate through misapplication and demoralization. The Government of India has begun to acknowledge the problem, at least that aspect which manifests itself in the unwillingness of many highly trained young Indians to return to India after the completion of their courses of study. It has made provision for a modest number of relatively liberal research fellowships for such young scientists who encounter difficulties of satisfactory placement upon their return from abroad. It is slower in responding to the far more complex and intractable problem of the atmosphere in the universities, but even there one notices a growing realism in influential circles. The remarkable thing is that in all this atmosphere of discouragement there are gradually emerging networks and groups of young and early-middle-aged scientists and scholars who are determined not to allow the deterioration of the standards and dispositions which their foreign study helped them to cultivate. They do so by maintaining a lively intercourse among themselves about problems of universal and Indian significance, while keeping up by correspondence and personal contact the bonds with the wider world which they established as students in foreign universities. It is on these still very small groups that the realization of the dream of a modern India, genuinely modern and genuinely Indian, so often dreamt from the time of Ram Mohan Roy to the time of Mr Nehru, ultimately rests.

ASIAN AND AFRICAN STUDENTS IN WEST GERMAN UNIVERSITIES

PRODOSH AICH

I

AT THE TIME when European powers dominated Africa and Asia, they were dependent for the consolidation and exercise of their power on the participation of some small fraction of the indigenous population in administration and law enforcement—at least on the lower and intermediate levels. In so far as education was necessary for the performance of these tasks, educational institutions were provided locally to train this indigenous personnel. They were adequate for the training of the lower ranks of the official class but not for those on the higher levels, to which indigenous persons began to ascend in small numbers in certain of the colonial empires. The training of these higher officials had therefore to be undertaken in the metropolis. Training in the metropolis was essential for those chosen for higher administrative duties, for whom it was not possible to provide adequate training in the colonies. Training abroad was also sought by those seeking to qualify for the practice of the medical and legal professions. Higher education in the metropolis was not the only kind of higher educational training available to indigenous persons, especially in the decades just preceding independence, and in India for much longer, but because of the prestige of the metropolis and its service, it conferred a greatly superior status on its beneficiaries. There came to be a fairly close association between having studied abroad and incumbency of influential and respected positions in that interstitial society between the traditional indigenous society and the society of the ruling expatriates.

The majority of the population of the former colonies still consider foreign study and training as a distinction. This has persisted through many great changes which have affected the position

of the educated classes of the once colonial countries. For one thing the vocational opportunities for the educated have increased tremendously in the new states of Asia and Africa. All of the higher levels of the civil service—still the major opportunity for the employment of the educated in these countries—are now to be staffed by indigenous persons. Even more important is the tremendous increase in the size of the civil service since independence. The new states aspire to be modern states, which means that they must provide social services, education, enlightenment, entertainment, medical care, civic formation and economic development—all through governmental action. All of these require social workers, teachers, wireless broadcasters, journalists, physicians, dentists, veterinarians, agronomists, engineers, research workers in a wide variety of fields of science and technology, statisticians, etc.

In addition to this, the policy of 'Africanization' or 'Indianization', etc., of the staffs of the foreign-owned firms in the new states also opens a large vista of well-paid employment opportunities. The diplomatic service, not too numerous but well paid and with great prestige and also offering the pleasures of 'abroad', likewise serves to announce that higher education can have its rewards. Quite apart from these, there is a genuine hunger for education as such, a fascination with the idea of being educated, which manifests itself in the desire for local elementary schools as well as in the readiness to support and seek higher education. As a result of these factors, after the attainment of political independence the aspiration for the distinction of foreign study has spread much more widely in society, even though those who aspire to study abroad still remain only a tiny minority of each generation.

One consequence of the expansion of the aspiration for higher education in the underdeveloped areas is that the traditional countries for foreign study, such as Great Britain, France, the Netherlands and the U.S.A., can no longer fully meet the demands of Asian and African students as they once did. Partly for political reasons, many countries outside the circle of those to which African and Asian students once flocked, have begun to attract students from the formerly or still colonial territories. The expansion of the aspirations in the Asian and African countries as well as the fact that admission to the universities of the former metro-

politan countries has become more difficult as their own student bodies have expanded so greatly have contributed to this modest redirection of the flow of students. It has been further facilitated by the making available of attractive scholarships, which are rendered all the more attractive to the new generation of aspirants who often come from classes in society which cannot afford to support overseas study from their own resources.

The Federal German Republic is one of the Western countries which has received an increased number of Asian and African students in the past decade. There had been handfuls of Asian, primarily Indian, students in Germany ever since the First World War. Sometimes impelled by the fame of Germany as a centre of science and learning, sometimes by a political reluctance to study in Britain, and by the equally political attraction to Germany as the adversary of Britain in the First World War, Indian students went to Germany in small but steady numbers between the wars.

Since the early 1950s, the number of such students in West Germany has risen rapidly. A comparison with the United States may serve to illustrate the speed with which the number of Asian and African students has increased in West Germany. Many years have elapsed since the number of 30,000 was first attained in the United States. Since about 1960, their numbers have risen to about 64,000. In West Germany, on the other hand, there were hardly 100 foreign students in 1950—today there are over 25,000. More than 60 per cent of these foreign students are from Asia and Africa.

II

It is inevitable that Asian and African students should encounter many new problems when they come to European industrial society.¹ They have to settle down to an intellectual discipline on a

¹ These observations are based on the results of my enquiry reported in *Farbige unter Weissen* (Cologne and Berlin: Kiepenheuer und Witsch, 1962) and of a second investigation which I undertook subsequently. In the former, 386 students from Egypt, Ghana, India, Indonesia, Iran, Jordan and Nigeria were interviewed in accordance with an elaborate interview schedule.

more advanced level, and to meet a standard which is usually much more exigent than any they have previously encountered; they have to adapt themselves to climatic changes, they have to get used to a foreign town, they have to make a fresh circle of acquaintances, they have to accustom themselves to new ways of eating and living and so on. In Germany, they have the additional burden of having to follow lectures and to read books in German, which very few of them have ever studied in school. The overcoming of all these difficulties is a matter of time and individual personality. None are spared difficulties of this kind.

Of course, the problems are not confined by any means to Asian and African students; they affect foreign students everywhere. But Asians and Africans, in the main, come from a social and cultural background which diverges much more widely from conditions in West Germany than that of the students from America or Europe. The very attitude towards learning, the evaluation of originality and the assessment of occupational achievement are among the matters about which there are deep differences between the indigenous and the host cultures.

These deeper problems are beyond the ken of the current notions, which penetrate beyond journalism even into the foreign student welfare offices of the German universities and according to which the real trouble is that the Asian and African students do not have sufficient contact with the teaching staff or with their fellow students and the rest of the population. These notions figure so prominently in public discussions in the press that the Asian and African students themselves have now come to believe that their difficulties arise from insufficient contact with the population. Our inquiries, however, have shown that they have no less contact with the local population than a German student who has come from another part of Germany, or than a non-German European or American student. Another widespread cliché to which much importance is attributed contends that Asian and African students in West Germany face very severe and distracting difficulties in the search for lodging, in their relationships with landlords and landladies, in the exorbitant rents, which are said to rise according to the relative darkness of the applicant's skin. Embarrassments and inconveniences of these sorts certainly do exist but they are not very central to the determination of the

value and effectiveness of the Asian or African student's sojourn at a West German university. The real difficulties of the Asian and African students in West Germany lie at a much deeper level. They involve above all the interests and the capacities of the students and the quality of their preparation for university study in a system such as prevails in West Germany.

The primary justification of study at a foreign university is the acquisition of knowledge and experience in a country and in an institution which, at least in the particular subject studied, is in advance of what indigenous institutions are able to offer. It is expected that the student will then return to his own country with the superior knowledge and skill conferred on him by his foreign training, and there to apply it in practice and to transmit it to his fellow countrymen as students, colleagues and citizens. The acquisition, practice and transmission of this superior knowledge and skill pre-supposes, of course, that the more advanced knowledge and skill are available in the foreign country and that the institutional possibilities of practice and transmission exist in the home country. No less important is the requisite motivation and capacity on the part of the students. Without these, foreign study is a vain and expensive enterprise.

III

Asian and African students may be led to study in an advanced country from a variety of motives. The allegation of a desire for superior knowledge and skill must be carefully scrutinized. If this allegation were correct, many of the students who come abroad might be as well served at home. The indigenous universities and technical and medical colleges are not in every case inferior to the institutions abroad to which the Asian and African students seek admission. It is not impossible to obtain an excellent education in certain colleges in India, for example, or in some of the universities in Africa—an education which is quite on a par with what could be obtained in some of the very respectable institutions in Western countries. There are several factors which prevent this from being done.

First of all, the intake of the best of the African universities is very limited in relation to the number of young Africans seek-

ing a higher education and the capacity of the high grade Indian colleges is also very restricted—although in terms of mere numbers there are ample places in the Indian college and university system.

These observations refer, moreover, only to the undergraduate level. When it is a matter of postgraduate research and professional training, the equipment and, even more, the teaching personnel scarcely exist in most subjects in the universities of underdeveloped countries. Some have no provision at all for postgraduate studies—some indeed have no provision for undergraduate study either—and much of the provision for postgraduate study that does exist is inferior to what is obtainable in the metropolitan countries. Against this background of a sharply restricted number of places, there is the fact that admission standards in the best African institutions are stringent. Those who anticipate failure at home sometimes seek to go abroad as a way of avoiding failure. Any African aspirant to university education who, owing to inadequate qualifications, cannot obtain a place in an African university but who can raise the funds, either from his family—65 per cent of the Asian and African students in West German universities are entirely supported by their families—from the philanthropy of foreign governments and organizations, or from the foreign universities themselves, can usually obtain admission to some foreign university or college, even though it is not of the best.

It is not surprising that those who fail to gain admission to their own universities should apply first of all to universities in countries where the language difficulty will be least formidable, that is, normally, the English- or French-speaking countries. But again, as university places are also restricted in these countries, only the best qualified can be admitted. Those who are not admitted there are therefore bound to take refuge in countries where they will have to learn a new language before they can begin studying and this usually takes more than a year. Then after they have completed their studies, they have the prospect of more time and trouble for learning the technical terms of their subject, either in their own language or in English or French. Thus the burdens lie more heavily on a group already suffering from the handicaps of defective aptitude, preparation or previous results. Many of the Asian

and African students in the Federal Republic have failed to gain admission to a university either at home or in one of the traditional places of study in the English- or French-speaking countries. The Asian and African students in the West German universities would thus appear to be less well qualified than their coeval compatriots in the English- or French-speaking universities.

There are certainly many well qualified young people among the Asian and African students in West Germany who, after completing their studies at a native university, have gone abroad for postgraduate training, or among the scholarship-holders, who have been awarded scholarships specifically so that they may study in this country; some among them have decided to study abroad in spite of having already gained admission at a native university, or have made the decision in the course of their studies at an indigenous university, or finally have for political reasons decided not to study in one of the metropolitan countries by which their fellow-countrymen were once ruled. Yet in the main, one does not have the impression that the majority of the Asian and African students have come to West German universities from a serious desire for learning or out of vocational ambition. The chief motives which bring such students to West Germany are social and economic rather than intellectual or professional. The majority of Asian and African students in West Germany seem to be interested not so much in receiving an academic training that will prepare them for the practice of an interesting and valuable profession as in acquiring a diploma which will they hope, bring them social prestige and advancement in the hierarchy of their own societies. Thirty-one per cent of those we questioned in our inquiry stated that they had chosen to come to West Germany because of the high reputation of German universities. Only 19 per cent gave as a reason for coming here the easier conditions of admission to German universities, or the lack of places in their own country. We discovered on further analysis that, in fact, 58 per cent of those we questioned decided to come to Germany because of the greater ease of admission to West German universities. Professional considerations appear to have played a part in choosing West Germany only in the case of 1 per cent of those we questioned. Four per cent came on the assumption that study is cheapest in West Germany. Ten per cent came because they had been

awarded a scholarship for a course in West Germany. Thirteen per cent came through the influence of friends, acquaintances and/or relations. Fourteen per cent came for political reasons.

This has some serious consequences. Although there are no comprehensive or reliable statistics available, and we only have the figures from a few universities, it is obvious that the proportion of examination failures among Asian and African students in West Germany is very high. Statistics have shown that the proportion of failures is about 80 per cent in the intermediate examinations and 40 per cent in the finals. The difficulties and failures, which result from the initially low level of qualification of so many of the coloured students in Germany, influence the whole career and outlook of those involved. Even when these students complete their studies successfully and return to their native lands they have to fight for recognition there. They will be up against competitors who are not only more numerous but who know very well that many of those who have studied in Germany failed originally to gain admittance to their own native universities because they were not up to the required standard. They will also, it should be acknowledged, have to compete with foreign-returned students who have received their training in universities which, whatever their merits in comparison with the German universities, have much more prestige in Asia and Africa than the German universities.

So obsessed are the Asian and African students with getting abroad, to whatever country, that their preparations are almost entirely limited to collecting information about the conditions of admission and the likely cost. They usually give hardly a thought to the problems which will confront them in the new country or to the intellectual substance of their work there. It is, it is true, extraordinarily difficult for these students to obtain information in their own countries about conditions in the foreign country and to prepare themselves for their new role. The available information is meagre and the lack of experience of the students, as well as the inadequacy of the educational counselling services at home and abroad, render it more difficult for the student to prepare himself realistically. Most students derive their information from the mass communication media, from the reports of friends and relations who may have been to the country in question and from

the information produced by embassies and consulates as well as from books about the country concerned.

A considerable number of those we interviewed had not even used the above-mentioned sources of information. But there is no doubt that even if all the possible sources of information have been utilized, the cultural shock experienced by the newly arrived student is bound to be great, because of the great differences in the whole socio-cultural background. How much greater must the shock be for those who come quite unsuspectingly without the slightest notion of what lies in store for them.

To understand the socio-psychological situation that faces these students immediately after their arrival in West Germany, several other factors have to be considered such as the social background of the students, their high standing at home and the resulting affront to their sense of status which they are bound to experience on arrival here. Apart from the socio-economic background of the Asian and African students, which ranges from the upper to the middle class, several other social features are characteristic of their general background. About 75 per cent of those who were questioned by us came from families whose members have already had contact with one or with several advanced countries. Twenty-one per cent had fathers who had themselves been educated abroad. Even their grand-fathers had already adopted non-traditional professions. An analysis of the professions practised by the students' fathers and grandfathers—through agriculture, trade, industry, commerce, to public service—shows that even in the last two generations their families had entered into the modern sector of their societies and they enjoyed the deference granted to that distinction. The progress had led from agriculture or trade by way of commerce to the public services. The majority of the families of the students we questioned may, therefore, be thought of as being in something like the upper middle class of their own countries. It is true that their families are not the richest in these countries but they are sufficiently well-to-do to be able to satisfy their craving for education by studying abroad. Yet when they come to study in an industrial country, the social pre-eminence they enjoyed at home is almost obliterated. In West Germany, where so little is known of Asia and Africa, the scion of such a family is just another coloured student and his superior status in

his own society is not denied, it is simply ignored. He does not find it easy to come to terms with this diminution of his status; this is one of the reasons for the hypersensitivity of Asian and African students which is so often criticized abroad. For a small minority this change of status has no such adverse effect, for they have no social standing at home and therefore none to lose when they go abroad, but even these come to share in the common grievances.

IV

Opportunities for learning German in the underdeveloped countries are provided only in the few Goethe Institutes and occasionally by private lessons from the handful of German residents. Most of the Asian and African students who come to West Germany experience considerable difficulty in communication on arrival and for some months afterwards. Even when these students have been able to learn German at home, they do not have sufficient command of the language on arrival to eliminate all the difficulties. Even in the United States, English-speaking Asian and African students have language difficulties to begin with, although they learned English as a compulsory foreign language, or had it as their medium of instruction. In Germany, naturally, the handicaps are even greater. The enthusiastic anticipation of life abroad suffers a disheartening setback due to these difficulties and those mentioned previously. However, the great expectations built around foreign study often help them to survive this frustrating start.

After overcoming the initial difficulties, these students become aware of another change of status which proves as great a burden in their everyday life as in their academic work. Abroad they not only lose the deference to which they are accustomed at home but—and this makes the situation worse—they come to be regarded as representatives of their native lands. The result is that nationality suddenly becomes a criterion with a determining influence on the student's personal standing. Their identification by the host population as representatives of countries which are economically and technically very backward is interpreted as a derogation. In response to this judgement Asian and African students

develop more of a sense of national identity and become more concerned to establish a favourable judgement of their country, in ways which they had never previously been. Then they feel that as representatives of their countries they must exemplify and insist on their virtues.

In most instances they are not well qualified to represent their countries. For one thing, they know too little of them. Their national self-consciousness and their curiosity about their country often come into existence only during their foreign sojourn. Their image of their own country as an entity takes form when they are away from it. Self-consciousness and sensitivity are not the same as knowledge and the Asian and African students tend, like their coevals anywhere, to be ignorant of their own society and of their cultural inheritance. The Western bias of the schools they have attended at home is in part responsible. But this only accentuates an inevitable ignorance, engendered by the limitations of the narrow experience of the student before leaving his own country.

Nonetheless, while abroad, he develops not only an identification of himself as a member of a nation but he also, in consequence of this identification, needs to see its dignity enhanced and appreciated by others. The belief, often supported by experience, that the population of the host country holds his country and its culture in low esteem, often leads him to be assertive on behalf of his country. It leads him to make claims on its behalf about which he often lacks strong conviction or about which he sometimes has opposite convictions.

The impulse to such assertiveness is accentuated by the painful sense that he himself and his country are held in low esteem by the people he encounters.

v

The encounter with Western civilization, the subsequent protracted colonial rule of the Europeans and the realization on the part of the peoples of Africa and Asia of their own economic and technical backwardness have made them into great admirers of European drive and efficiency. The governing élite in these countries, to which the Asian and African students belong, oriented

as they are to rapid progress, regard the majority of their compatriots as inferior in comparison with Western people. The students share these views and yet the feeling that they are being assessed by the host populations as members of an inferior category draws them toward the denial of the very views which they share.

As the length of their sojourn increases, their sense of inferiority diminishes. The longer the Asian or African student stays in West Germany, the more critical becomes his judgement of that country and the more he feels that he himself is being judged favourably. The reason for this may be that in the course of time, he comes to think of himself as no less intelligent and capable than his German fellows and this leads to a more sober evaluation. Another reason may be that at the beginning of his stay the foreign student accepts the derogatory attitude of the German population. But in the course of time the situation undergoes a radical change. The more the student perceives the derogatory attitude of the West Germans as based on prejudice and ignorance, the more easily he can reject the negative judgement which he himself has shared. Furthermore, he begins to see some of the deficiencies of an advanced Western society and those which he does not see himself, he learns from the Western intellectual of Western society.

The rate at which the various nationalities overcome their initial sense of inferiority differs considerably. We have found, for example, that the Indian and Indonesian groups not only get over this feeling very quickly but soon go to the other extreme. Both these countries have long been acknowledged by the Germans as lands of ancient civilizations, a view which helps to offset the judgement of these countries as socially and economically backward. At the outset of their residence in West Germany, Indian and Indonesian students gravitate towards representatives of Western culture, but in the course of time, they develop a special sense of group solidarity among themselves which, whilst it is clearly directed against their German hosts, is by no means identical with the traditional community feeling of their native lands. Students from the Middle East take much longer to overcome their sense of inferiority. This might result in part from the fact that in West Germany persons from the Middle East do not from the outset evoke

among their hosts a sense of high culture. The process of overcoming and compensating for the sense of inferiority leads to an ambivalent attitude to Western culture and to the West Germans. The students want, on the one hand, to acquire the knowledge that is available in West Germany and also to some extent to adopt Western values and ideas; on the other hand, in the course of seeking an affirmative attitude towards their own indigenous values, they develop a critical and even derogatory view of the culture and social order of the West.

V I

Asian and African students naturally attract attention in Europe simply on account of the colour of their skin. Quite apart from all other criteria, the colour of their skin makes it almost inevitable that they should be treated differently. Foreigners in any society are treated differently, of course, but the tokens of their foreignness are not usually so external and obvious as in the case of the Asian and African students. They can never be fully assimilated into their new surroundings; whatever else might happen, they are and remain, throughout their whole stay, foreign simply because they are immediately recognizable as such. Even if they adjust their patterns of behaviour so that they are scarcely distinguishable as such from those of the West Germans all around them, even if their way of thinking and their standards and values coincide almost entirely with those of the local population, they are assigned a status different from that which the social system provides for local persons fulfilling the same role. The Asian and African students' expectation of unfavourable discrimination and being responded to as outsiders throws up a whole series of different problems, the consequences of which are likely to be more injurious than the unfavourable discrimination itself. Discrimination against the Asian and African students begins to become a particularly serious problem after the initial process of adjustment has been completed, that is, after they have mastered the difficulties that face them at the beginning of their stay, and after they have begun to approximate to more or less the same status as their German fellow students within the university community. By this time they have normally overcome the language problem,

acquired a circle of friends by whom they are fully accepted and have made the standards and values of this group completely their own. They cease to be so uncertain about their role and they no longer feel that they are foreign bodies within the university. Yet within the larger West German community they are still foreigners and they are still the victims of discrimination. They are not treated as equals either by the majority of the population or by the general body of German students. The consequences would not be so fatal if, as a result of this continuing discrimination, the Asian and African students decided to reject the West Germans *en bloc* or as individuals and form a stronger sense of solidarity with their own national groups. But this does not normally happen. Most Asian and African students endeavour to become as assimilated as possible to the local community by adopting all the local standards and values. The first result of this endeavour is that they are often regarded as anomalies by the subcultures of the German society to which they belong, while they in turn develop an occasionally aggressive and even somewhat contemptuous attitude to their own group. Another reaction to discrimination is that as national groups they try to obtain greater acceptance by the local community than the other national groups to which they affect a discriminatory attitude. This apparently intensely felt need of many Asian and African students to identify themselves with the West German population, i.e., with the white people, and the simultaneous rejection of them by this same white majority, though not by the academic subcultures to which they belong, inevitably produces powerful frustrations which are bound to affect the student's whole attitude to the German community.

The students who experience this deprecation as inferiors come as we have said earlier from sections of their own societies which stood in close proximity to the foreigners who once ruled them. Their parents and grand-parents as civil servants, professional persons or as businessmen adhered to a more or less Westernized, modern pattern of life. Since the Europeans made a distinction between the minority that supported them and the rest of the natives, and since the majority of the native population admired the drive and efficiency of the Europeans and of the minority who cooperated with them, the latter not only enjoyed better treatment at their hands but also enormous prestige among

the rest of the population. Their status became more and more like that of the Europeans and they came to think of themselves as belonging more in the category of the Europeans than to their own compatriots. For this reason, the experience of deprecation and discrimination which they encounter is unexpected—only 17 per cent expected any discrimination in West Germany—and traumatic.

The lighter the colour of their skin, the less foreign they look, the more strongly they tend to identify themselves with the local population. Whether it is because of their own experiences or those of their compatriots, the very dark and the dark coloured students do not seem to aspire to this identification to the same extent. This leads to a deepened awareness of the value of their own national group and they come to attribute to their own group more positive and less negative qualities than to the local community among which they are living.

VII

The heightened national identification of the students is accompanied by a counter-tendency. As their stay lengthens, the Asian and African students lose touch almost entirely with their friends and acquaintances at home and limit their correspondence with their relations and even with their parents. They become emancipated from their traditional religious influences. Their material demands and desires no longer correspond to those of their old friends at home but become almost identical with those of their foreign hosts. They come to prefer the foreign way of life and they admit this quite openly. One result of this change is that many of them are not prepared to return home after completing their studies. They try at any rate to defer their return home as long as possible. Only 29 per cent of our sample were prepared to return home straight away after finishing their training. Understandably, these delaying tactics are excused on the grounds that they need to gather practical experience after completing their purely academic studies. But this is clearly a mere pretext. The more the Asian and African student anticipates difficulties in the process of readjustment when he returns home—and they all have to face that prospect—the less he wants to return home after finishing his studies. The inevitable difficulties of readaptation

make it appear unlikely that those who do return home will be in a position immediately to begin fulfilling the role for which they might be qualified in the social transformation of their country. And the process of readjustment will be the more complicated because they have, whilst abroad, deliberately adopted part at least of the Western system of values, which differs considerably from the system generally current in their native land.

VIII

Since the educational institutions of all countries serve both universal value and local necessities, often intertwined to the point of inextricability, it might be argued that Asian and African students after completing their training are better equipped to work in the place where they have been trained than they are at home. To work effectively in their own countries, they have to reinterpret what they have been taught so that it can be applied to their own local necessities. If they fail to do so, their skills are ornaments rather than instruments. Is it not conceivable that these young people are running the danger of becoming homeless intellectuals rather than driving forces of social change in their native lands?

It is certain that the underdeveloped areas cannot achieve any economic and technical progress worth mentioning unless the intellectual capacity of a considerable section of the population is raised. Knowledge must be acquired which is not yet available in these countries and the high intellectual discipline attained that is taken for granted in all industrial societies. But are long years of study abroad the only road that is open? The chances of success would probably be a great deal better if the educational institutions in these areas were extended and modernized through the introduction of foreign teaching staffs and by the exchange of indigenous staff with those of foreign institutions. The most specialized and advanced types of training might still be unfeasible in Asia and Africa because of the limited demand in any one area and because of the high costs and the scarcity of talents; the more ordinary types of training could, however, be carried on in the Asian and African countries and many of the painful experiences of foreign study and the losses arising from irrelevance to local problems could be reduced.

UNIVERSITY STUDENTS AND POLITICS IN UNDERDEVELOPED COUNTRIES

SEYMOUR MARTIN LIPSET

The University in Underdeveloped Countries

THE TASK OF the universities in the underdeveloped countries of the world are fundamentally not very different from what they are in more highly developed societies. They must transmit in a more differentiated and more specific way the cultural heritage—the history, the scientific knowledge, the literature—of their society and of the world culture of which their society is a part; they must train persons who will become members of the élites of their societies to exercise skills in science, technology, management and administration; they must cultivate the capacity for leadership and a sense of responsibility to their fellow countrymen and they must train them to be constructively critical, to be able to initiate changes while appreciating what they have inherited. The universities must contribute new knowledge to the world's pool of knowledge and must stimulate in some of the students, at least, the desire to become original contributors to this pool, as well as equipping them with the knowledge and discipline which, given adequate endowment, will enable them to do so. Regardless of whether the university system seeks to educate only a very small fraction of the stratum of university age or a quite large proportion, these tasks remain the indispensable minimum. A university system which fails to perform these functions, however useful it might be in other respects, is not doing its job. It will become parasitic on the university systems of other countries and will be unable to cope with the tasks of national development.

In the underdeveloped countries, the role of the universities is especially important because the élites of the modern sector of the society are drawn very largely from the reservoir of persons with university training. There is no class of indigenous business enter-

prisers who, without university training, have taken or are likely to be allowed to take the main responsibility for economic development—as they did in Europe and America in the nineteenth century. There is no class of highly skilled artisans from whom significant technological innovations will come forth. There is very little research in most new states, apart from the little that is done in universities—although the balance is now beginning to change in favour of non-university research establishments. Much of the intellectual journalism, *e.g.*, analytical commentary on public policy, emanates from the universities. Thus the universities alone must not only produce much of the élite which must modernize the society, but they are also almost solely responsible for the conduct of intellectual life in general in their own countries. A substantial proportion of the political élite, too, is bound to emerge from the ranks of university graduates, even in a time of populist politics.

The universities of the underdeveloped countries bear the burden of being, in an age of nationalism, institutions part of whose task it is to propagate a universal culture and to contribute to its growth, while simultaneously cultivating and developing the indigenous, actually or potentially national culture and enhancing national life. The task of interpreting the indigenous cultural inheritance through linguistics, anthropology, sociology, historiography, literary history and criticism, must also be conducted according to standards and procedures of universal validity. Not only do the substance and procedure of university study partake of universality, but they are from the beginning of the modern age, and still at present, derived from the accomplishments of academics and amateurs of the Western, Central and Northern European culture area, including the North American, the very areas of the world against which the twentieth-century nationalism of Asia, Africa and Latin America is asserting itself. The situation is not made easier politically and pedagogically by the fact that in Africa and in major areas of Asia, university teaching and scientific writing are still conducted in the languages of the former colonial powers. Even where this is not so, a university to perform its functions well must still, and will for some time to come, depend on books and periodicals written and printed in the metropolitan countries. Moreover, the universities of the

underdeveloped countries must still share the performance of their tasks with the metropolitan universities, which for much of the world carry the major responsibility for advanced training in science and scholarship.¹

Under these circumstances, the universities are bound to be subject to pressure from their politically sensitive fellow countrymen and from the opinion of their academic colleagues overseas. They will also be under pressure from their own student bodies, who at the most sensitive and reactive stage of life are being subjected to a discipline which is alien to their own indigenous social and cultural traditions and on their performance on which, assessed by "alien standards", their future will largely depend. Universities to be successful must form a community which embraces students as well as teachers and research workers. Universities must develop a culture of their own. This culture must go beyond the bodies of specific knowledge which are taught and cultivated and extend to a vague ethos of attitudes and sensibilities, of stan-

¹ Systematic inquiry into the problems of overseas studies has scarcely begun. Some pioneer works are Singh, Amar Kumar, *Indian Students in Britain* (London and Bombay: Asia Publishing Co., 1963); and Aich, Prodosh, *Farbige unter Weissen* (Berlin and Cologne: Kiepenheuer und Witsch, 1962). These books have been summarized in the following articles: Singh, Amar Kumar, "Indian Students in Britain", *Minerva*, I (Autumn, 1962), 1, pp. 43-53, and Aich, Prodosh, "Asian and African Students in West German Universities", *Minerva*, I (Summer, 1963), 4, pp. 439-452. Cf. also: Meijer, J. M., *Knowledge and Revolution: The Russian Colony in Zurich (1870-1873), A Contribution to the Study of Russian Populism* (Assen: Van Gorcum and Comp., 1955); Selltiz, Claire, et al., *Attitudes and Social Relations of Foreign Students in the United States* (Minneapolis: University of Minnesota Press, 1963); Beals, Ralph, and Humphrey, Norman, *No Frontier to Learning: The Mexican Student in the United States* (Minneapolis: University of Minnesota Press, 1957); Bennett, John W., Passin, Herbert, and McKnight, Robert, *In Search of Identity: The Japanese Overseas Scholar in America and Japan* (Minneapolis: University of Minnesota Press, 1958); Lambert, Richard D., and Bressler, Marvin, *Indian Students on an American Campus* (Minneapolis: University of Minnesota Press, 1956); Morris, Richard, *The Two-Way Mirror: National Status in Foreign Students Adjustment* (Minneapolis: University of Minnesota Press, 1960); Useem, John, and Useem, Ruth Hill, *The Western Educated Man in India* (New York: Dryden Press, 1955).

dards and canons of judgement which must be assimilated and cannot be explicitly taught.²

It is difficult enough to infuse such a culture into a new generation even in societies where the culture of the university is more or less integral to the indigenous culture. It is even more so in underdeveloped countries, where it is still in greater or lesser measure an alien culture, alien to the background from which the students come.

The central tasks of the university cannot be performed without the assimilation of the student body into the university community, which is a graded community, inevitably hierarchical by virtue of differences in age and competence. This task is not an easy one, but on its effective performance depends the success of the university in the performance of its essential functions.

University students are not, however, merely prospective members of the élites of their countries. Particularly in the underdeveloped countries, university students do not just prepare themselves for future roles in public life; they play a significant part in the political life of their countries even during their student period. The intensity of the university students' political activity is in some sense a measure of the failure of the university as an academic community. This is not necessarily and always so, but it does seem to be so in the underdeveloped countries where universities operate under severe handicaps of unfavourable traditions and a paucity of resources, human and financial, and where student politics are frequently associated with the rejection of the intellectual leadership of the faculty of the universities.

Quite apart from influence of the life of the university itself on the students' disposition towards politics, the position of the student in an underdeveloped society is itself conducive to political preoccupations. For one thing, the modern educated classes of the former colonial countries of Asia and Africa were the creators of the political life of their countries. University students

² Michael Polanyi has best described the nature of this community, particularly the mode by which "tacit knowledge" is communicated. Cf. *Personal Knowledge* (London: Routledge and Kegan Paul, 1958); *Science, Faith and Society* (London: Oxford University Press, 1946; reprinted Chicago University Press, 1964); and "The Republic of Science: Its Political and Economic Theory", *Minerva*, I (Autumn, 1962), 1, pp. 54-73.

and, where there were no universities, secondary school students, played important roles as adjuncts to the movements for independence. Students at overseas universities became nationalists in the course of their sojourn in a foreign country and they organized political bodies which, at least in the case of the African countries, were the first steps towards independence. Since so much of the political life of the colonial period, which permitted, except in its last period, little constitutional and responsible political activity, strikes, demonstrations and agitation were major forms of political activity. Students were ideally suited, by the disposition of adolescence in situations of relatively safe rebellion against authority, for such activities. The political tradition then engendered has persisted into independence.

Their self-consciousness as a distinctive group with high status and with relative immunity from severe repression has also continued into independence. In societies where learning has been associated with religion and earthly authority, students, as aspirants to that learning, have enjoyed great respect. University students, too, are quite often the offsprings of families of some eminence in their respective countries. Their status as kinsmen of the incumbent élites, and as prospective members of the élite themselves, affords them a special position among oppositional groups. They tend to be confident that the harsh suppression to which other opposition groups are subject will not fall to their lot. This, too, encourages their entry into the political sphere.

It should also be pointed out that public opinion in underdeveloped countries is not constituted by the views of a large and educated middle class of professional and business men and women. Because of the small size of the educated middle class, students in certain underdeveloped countries make up a disproportionately large section of the bearers of public opinion; their various affinities of education, class and kinship with the actual élites give them an audience which students in more developed countries can seldom attain.

Finally, university students in underdeveloped countries are the heirs of a European tradition of student politics. In Germany and Russia, student politics³ gave much animation to the move-

³ Cf. Coquart, Armand, *Dmitri Pisarev (1840-1888) et l'idéologie du nihilisme russe* (Paris: Institut d'Etudes Slaves de l'Université de Paris,

ment for national renewal and progress in the nineteenth century. In France, too, in the nineteenth and twentieth centuries, university students have been significantly drawn towards revolutionary, agitational and demonstrative politics. The traditions of European liberalism, rationalism and nationalism found their main recipients in underdeveloped countries, within the ranks of the educated classes. All these movements have left behind a precipitate which has entered into the nationalist and oppositional politics of the underdeveloped countries, both those which have recently been colonial and those long independent.

Endemic to all progressive societies has been a tension between the intellectuals, religious and secular, who seek to transmit and affirm traditional views and those engaged in research and artistic creativity whose roles require them to criticize, revise and supplant tradition. The latter value new discoveries and innovation, not the reproduction, copying or transmission of old discoveries and ideas. Originality, departure from what is established and officially accepted, is a central value in the outlook of the modern intellectual. More generally, in the tradition of the intellectual classes of Western society, there are important currents of long duration and great intellectual value which have set the intellectuals against established authority.⁴ These include scientism, romanticism, revolutionary apocalypticism and populism. These traditions largely form the characteristic outlook of the intellectuals outside universities. Universities have been institutions established by or supported by the authoritative centre of society—political and ecclesiastical—and they have been more integrated into the tasks of training young persons for careers connected with the central functions of society and culture. But they, too,

1946), pp. 25-44; Malia, Martin, *Alexander Herzen and the Birth of Russian Socialism: 1812-1855* (Cambridge, Mass: Harvard University Press, 1961), Chapter IV, pp. 57-68; Gitermann, Valentin, *Geschichte Russlands* (Hamburg: Europäische Verlagsanstalt GmbH, 1949), Vol. III, Part 8, Chapters 2 and 4, pp. 212-252 and 272-301; Griewank, Karl, *Deutsche Studenten und Universitäten in der Revolution von 1848* (Weimar: Hermann Bohlaus Nachfolger, 1949); Brinkmann, Carl, *Der Nationalismus und die deutschen Universitäten in Zeitalter der deutschen Erhebung* (Heidelberg: Carl Winters Universitätsbuchhandlung, 1932).

⁴ Cf. Shils, Edward, "The Intellectuals and the Powers", *Comparative Studies in Society and History*, I (1958), 1, pp. 15-21.

by their stress on scientific discipline and detachment from the idols of the market-place, have nurtured a critical attitude. Especially in the social sciences has there been a tension between the affirmation of the dominant systems of practices and beliefs and a critical attitude towards those systems.⁵

It is this anti-traditional outlook of modern Western intellectual life which has found reception among the intellectuals of the underdeveloped countries and it provides the point of departure of the youngest generation of intellectuals in those countries.

A not unimportant factor which has encouraged the presence of critical, anti-traditional opinions and groups on campuses is the tradition of corporate autonomy of the university, which became established on the European continent in the Middle Ages. The norm has become strong enough in recent years in the United States, and for a longer time in Great Britain and France, to protect the freedom of social scientists and others to present views in writing and in the lecture halls, which are antithetical to the economic, political and religious views of those who govern the university or the society. In Czarist Russia, university autonomy operated at times to allow the adult sections of illegal revolutionary groups to hold meetings in university precincts, without interference by the police. In Venezuela, in recent years, terrorists have exploited this tradition of university autonomy by using the university precincts as a sanctuary from the police. Seemingly, the recognition that a university must have freedom if it is to carry out its function as a source of innovation, has been more powerful in many countries than the threat such freedom might pose to

⁵ Cf. Robert Waelder, who writes that antagonism between intellectuals and the dominant institutions and classes has existed

To some degree . . . in all societies in which intellectuals have enjoyed the freedom of expression. Since the days of the Sophists, they have been in the habit of questioning and challenging the values and the assumptions that were taken for granted in their societies. . . .

Intellect tends to question and thereby to undermine dogma and tradition. The act of understanding, said the historian of science Charles Coulston Gillespie, is an act of alienation. . . . Alienation is an aspect of emancipation.

"Protest and Revolution against Western Societies", in Kaplan, Morton A. (ed.) *The Revolution in World Politics* (New York: John Wiley, 1962), p. 15.

the political and economic self-interest of the dominant elites.

The way in which norms arise has been described in the case of Meiji Japan, whose late nineteenth century leaders imitated Humboldt and the Prussian educational reformers in consciously recognizing the need to differentiate between the "indoctrination" function of primary education and the "creative" role of the universities in fostering research and training leaders. The initial educational ordinances drawn up by the Minister of Education, Arinori Mori, in the 1880s were explicitly concerned with such distinctions. He "believed that primary education, by being based on the doctrines of Japanese nationalism and militarism, would help teach the people to be loyal to the state while they were still in the formative period of their lives. But he also believed that if education were limited to the primary level, leaders could not be produced with sufficient grasp of science and technology to contribute to the prosperity of the nation. He was therefore convinced that, in both research and instruction, universities and professional schools should assume the task of preparing such leaders and that *sufficient and appropriate freedom should be allowed for this purpose. . . .*"⁶

It is, therefore, not surprising that university students, when they develop political concerns, should be more radical than the classes from which they come even in the underdeveloped nations. In the United States, where, until recently, university students have not played a notable part in public or political affairs, they are much more prone to favour the Democratic Party and to support liberal and even socialist measures than is the middle class in general. Likewise, in Britain and most European countries, the leftist parties are considerably stronger among university students than they are in the rest of the middle class.⁷

⁶ Nagai, Michio, "The Development of Intellectuals in the Meiji and Taisho Periods", *Journal of Social and Political Ideas in Japan*, II (April, 1964), 1, p. 29. Although Mori favoured freedom within the Imperial University of Tokyo, "he was convinced that what was taught in Tokyo University should not be conveyed to the masses since too much free thought among the masses might pose a threat to the regime".

⁷ Unpublished data from an ongoing American study of student attitudes in several colleges and universities in different parts of the United States reveal that students by and large are more likely to prefer the Democratic Party, and for this preference to increase from their first year

Students and Politics in Communist Countries

The situation in the various communist countries, of course, has been quite different, particularly in Stalin's time. Public oppositional politics have rarely been possible. It is noteworthy, however, that students and intellectuals have played a major role in the movements to liberalize the totalitarian regimes. This was especially true in Poland and Hungary in 1956. In Poland the chief critical magazine was a student journal, *Po Prostu* (Plain Talk), which served as the main rallying point for the liberal elements as long as it was allowed to exist.⁸ In Hungary, also, the university student body was a major force in the groups leading the uprising.⁹ In the Soviet Union, intellectuals, particularly young ones, including students, have played a major role in demands for reform, insisting on more freedom and more intellectual integrity. A former student of Moscow University now living abroad reports that while "it is difficult to give exact figures, . . . my estimate of the proportion of Soviet students whose political discontent

in university onward. Study of Selected Institutions, Centre for the Study of Higher Education, University of California, Berkeley. Many studies reveal the effect of education, especially at the university level, in reducing prejudice and increasing liberal and tolerant attitudes. See, for example, Stember, Charles Herbert, *Education and Attitude Change* (New York: Institute of Human Relations Press, 1961); and Stouffer, Samuel A., *Communism, Conformity, and Civil Liberties* (Garden City: Doubleday and Co., 1955), pp. 89-108. Evidence for Britain is provided in a British Gallup youth poll conducted in 1959. For Germany, a comparison of party preferences among university students, in Habermas, Jürgen, *et al.*, *Student und Politik* (Neuwied am Rhein und Berlin: Hermann Luchterhand Verlag, 1961), p. 290, with those of university-educated voters in Hirsch-Weber, Wolfgang, and Schütz, Klaus, *Wähler und Gewählte* (Berlin und Frankfurt a.M.: Verlag Franz Vahlen GmbH, 1957), p. 309, reveals a higher preference among students for the Social Democratic Party.

⁸ See Lewis, Flora, *The Polish Volcano* (London: Secker and Warburg, 1959), pp. 67-69, 134-135. *Po Prostu* was shut down in October 1957, one year after the demonstrations which had opened the way to liberalization. Students rioted for four days in vain protest; pp. 255-256. See also McIntyre, William R., "Students' Movements", *Editorial Research Reports*, II, 23, 11 December, 1957, pp. 915-916.

⁹ The first demonstrations in Hungary in 1956 were those of the university students. Student organizations were also the first groups formed breaking openly with Communist Party control. See Kecskemeti, Paul, *The Unexpected Revolution: Social Forces in the Hungarian Uprising* (Stanford University Press, 1961), pp. 79-82, 106-109.

was revealed during the thaw of 1956 would be from one-fourth to one-third of the total. With the exception of the professional activists, the remaining played the familiar role of 'the masses': their attitude toward the political *avant-garde* was sometimes sympathetic, sometimes uncomprehending, but rarely hostile".¹⁰ During 1956-57, following the 20th Party Congress, there were open attacks on the leadership of the Young Communist League, with demands for more freedom and democracy: "Illegal and semilegal student journals with such characteristic titles as *Heresy* and *Fresh Voices* began to appear; they discussed art and ideology, ridiculed socialist realism, and attacked the local Komsomol leaders. Wall newspapers began to print 'undesirable articles.' . . . Finally during the Hungarian uprising an account of the events, as gathered from a British Broadcasting Company [*sic*] broadcast, was posted on a bulletin board in the University of Moscow. . . ." ¹¹

In Communist China, the year 1957 witnessed the "Hundred Flowers" campaign, in which criticism was openly encouraged by Mao Tse-tung and other party leaders. The results startled the regime, since for five weeks it was exposed to a barrage of sharp attacks by older intellectuals and students. As one Frenchman present in China during this period reported: "What really shook the party was a feeling that it faced the loss of its control over the youth. Young people brought up under communist rule had become the loudest in denouncing the party which had vested its hopes in them."¹²

Some indication of the nature of the criticism may be found in the pamphlet, *Look! What Kind of Talk Is This?* published by a party organization, the Peking Student Union, on 14 June, 1957, as a collection of critical attitudes to be dealt with in reindoctri-

¹⁰ Burg, David, "Observations on Soviet University Students", *Daedalus*, LXXXIX (Summer, 1960), 3, p. 530.

¹¹ *Ibid.*, pp. 530-531; see also Laqueur, Walter Z., and Lichtheim, George, *The Soviet Cultural Scene 1956-1957* (New York: Frederick A. Praeger, 1958), pp. 215-220.

¹² Goldman, Rene, "The Rectification Campaign at Peking University: May-June 1957", *The China Quarterly* (October-December, 1962), No. 12, p. 139. For a report by a participant, see Chu-kuo, Tang, *The Student Anti-Communist Movement in Peiping* (Taipei: Asian Peoples' Anti-Communist League, 1960).

nation sessions. The statements so presented "are not anti-socialist; they are anti-party, anti-Kuomintang, anti-imperialist, anti-Stalin, pro-Tito".¹³

There is, of course, no reliable way of estimating the extent of critical sentiments and behaviour among university students in communist (or even other, more accessible) countries from evidence concerning protests which have become known. While such sentiments and actions are extremely important, it may be that most of the students passively support the *status quo*. Survey data based on samples of total student populations gathered in Warsaw in 1958 and 1961, and in Zagreb in 1961, do not, however, support this hypothesis. The Polish data clearly indicate that the bulk of the students were socialist, anti-Marxist, favourable to freedom and civil liberties, and egalitarian (as indicated by support for a narrow range in the distribution of income), and that 45 per cent had played an active role in the anti-Stalinist demonstrations of October 1956. Less than one-quarter (24 per cent) approved of the activities of the communist youth organization, and 72 per cent voiced dissatisfaction with them. Sixty-eight per cent favoured some sort of socialism, but only 13 per cent identified themselves as Marxists and 68 per cent indicated clear opposition to Marxism.¹⁴ A survey of Yugoslav students at the University of Zagreb suggests greater support for the official ideology. Over half (53 per cent) stated that they accepted Marxism fully, while another 19 per cent indicated partial acceptance.

¹³ Doolin, Dennis, (ed.), *Communist China: The Politics of Student Opposition* (Stanford: The Hoover Institution on War, Revolution and Peace, 1964), p. 14. This publication contains a verbatim translation of the pamphlet published by the Peking Student Union.

¹⁴ See Nowak, Stefan, "Social Attitudes of Warsaw Students", *Polish Sociological Bulletin*, (January-June, 1962), No. 1-2 (3-4), pp. 91-103; Nowak, S., and Pawelczynska, A., "Les attitudes idéologiques des étudiantes de Varsovie", *Esprit*, XXVI (1958), 11, pp. 699-707; Nowak, Stefan, "Factors Determining Egalitarianism of Warsaw Students", *American Sociological Review*, XXV (1960), 2, pp. 219-231; Pawelczynska, A., and Nowak, S., "World Outlook of Students in a Period of Stabilization", *Polish Perspectives*, V (February, 1962), 2, pp. 38-50; Jozefowicz Zofia, Nowak, Stefan, and Pawelczynska, Anna, "Students: Myth and Reality", *Polish Perspectives*, 1 (July-August, 1958), 7-8, pp. 21-28; and "Students: Their Views on Society and Aspirations", *Polish Perspectives*, I (November-December, 1958), 11-12, pp. 31-43.

On the other hand, when asked their opinion of the leaders of the official League of Students, less than half (43 per cent) approved of them, while 53 per cent would have preferred other leaders. And 26 per cent of the respondents indicated that they sometimes thought they would be "more satisfied" if they could live abroad.¹⁵

The history of student politics in the countries of Eastern Europe and China still arouses old memories and calls forth corresponding responses from the present rulers of these countries. The efforts of students and intellectuals were of notable importance in undermining pre-communist regimes in these countries and current efforts at their suppression may be consciously related to an awareness of that history.¹⁶ In his classic study of Czarist Russia, set consciously in a Tocquevillian framework, Leroy-Beaulieu noted: "The schools . . . have always been the hotbeds of radicalism and the higher the school, the more imbued with the revolutionary spirit the young people who graduate therefrom. . . . Science and education, no matter how watchful the supervision they are subjected to—by the wants which they create, by the confidence in right and reason which they inspire, by the curiosity they arouse and the comparisons they suggest—invincibly predispose to criticism, to free investigation, hence to liberalism, to the spirit of innovation."¹⁷

¹⁵ Study conducted by Professor V. Serdar, preliminary results of which were published in Martić, Mirko, "Studenti Zagrebackog sveučilišta u svijetlu jednog anketnog istraživanja", *Nase Teme* (Zagreb), (1961), No. 2.

¹⁶ Socialists and others face the dilemma in the emerging world. In Burma it may be recalled that it "was from the university students' union that the AFPFL (socialist) government sprang, and that precedent was ironically ominous: for the communists had made inroads among the students. The Rangoon Students' Union and the All-Burma Federation of Students' Unions, both of which were captured by the communists, were much stronger than the Democratic Students' Organization sponsored by the socialists. The situation deteriorated to such an extent that the government felt obliged in October 1956 to ban student unions in schools." Rose, Saul, *Socialism in Southern Asia* (London: Oxford University Press, 1959), p. 142. Similarly in Venezuela, the social-democratic government of Betancourt and Leoni has been led by men who had themselves entered politics via the student movement and who played a major part as student leaders in undermining reactionary and authoritarian regimes. They are now faced by a student movement in which communists play a significant role.

¹⁷ Leroy-Beaulieu, Anatole, *The Empire of the Tsars and the Russians*, Part II: "The Institutions" (New York: G. P. Putnam's Sons, 1894), pp.

The university students in particular were among the few to engage in demonstrations demanding freedom and major economic reforms from the mid-nineteenth century on. Many of these early protests began as struggles for greater rights for students within the universities and then widened their objectives as they met with repression. A report by a faulty commission of the University of Moscow, written in 1901, traced the causes and nature of every student disorder back to the 1850s. It "noted that since 1887 they had become almost annual. . . . This upward trend of student disorders was confirmed by statistics on expulsions from the university, which had doubled in the six years from 1894 to 1899, as compared to the preceding seven years. During the later period, a total of 1,214 students were expelled from the University of Moscow. . . ." ¹⁸ Student strikes and demonstrations became even more prevalent after 1899, reaching a climax in 1905, when the universities were closed by the government. "In 1901, the workers were to learn the value of the street demonstrations from students. These demonstrations, first organized by the university students of St Petersburg . . . spread rapidly to

486-487. He documents these contentions with reference to statistical data on the background of those revolutionists who had been arrested, which showed that four-fifths had received higher or secondary education, most of them in government schools, and that a "statistical list of 1880 shows four-fifths of the agitators arrested by the police to have been nobles, sons of priests, of functionaries and officers, of merchants or city 'notables', only 20 per cent were small employees, working people, and peasants". See his footnotes on pp. 485 and 486 Cf. also Kiss, Gabor, *Die gesellschafts-politische Rolle der Studentenbewegung im vorrevolutionären Russland* (München: Georg Heller Verlag, 1963). Conrad, Joseph, *Under Western Eyes* (London: J. M. Dent, 1955) is one of the classic treatments, perhaps the greatest, of Russian student politics under the *ancien régime*. On the beginnings of the student movement, cf. Venturi, Franco, *Il populismo russo*, Vol. I, Ch. VIII, "Il movimento studentesco", pp. 366-385 and *passim*. Alexander Herzen in his *My Past and Thoughts* (translated by Constance Garnett), presents a beautiful account of the political sensitivity of the Russian university students of the 1830s. Vol. I (London: Chatto and Windus, 1924).

¹⁸ See Fischer, George, *Russian Liberalism* (Cambridge, Mass.: Harvard University Press, 1958), pp. 53-56. Fischer points out that in Russia before 1905 when the lower classes were quiescent, students were the one group which had "the numbers and the hardiness to stand up physically to government force".

other universities and were promptly joined by sympathetic workers and other elements of the urban population."¹⁹ The freedom which was won by the students for themselves, in the form of autonomy given to the universities in 1905, helped facilitate revolutionary disturbances. "The student movement was being led by a group of extreme radicals, mostly Social Democrats and some Socialist Revolutionaries and others. . . . Overriding the liberal professors who sought a return to normal academic life, the students opened the doors of the universities to mass meetings of the workers. Since the police could not enter the universities except at the request of the university council, these meetings were held in complete freedom. Here, in closed quarters, revolutionary speeches were made and strikes organized; here the revolutionary parties made their plans without interference."²⁰

Sixty years ago, Bernard Pares included students, with the intelligentsia, as the carriers of the revolutionary outlook in Czarist Russia. His analysis emphasized some of the determinants that have been pointed to in recent analyses of the politics of university students in underdeveloped countries: "The universities, long the fortress of criticism, had united within their walls a number of young men who were never again in all their lives to meet so many of their fellows under the inspiration of a common ideal. Here they were still young in heart and brain, and as yet unhampered by the practical concerns of life. They did not represent any ruling class; naturally, their interests were quite as much social as political; and students or ex-students, especially those who crossed the frontier, might be expected to carry on a scheme of social propagandism as wholehearted and as all-embracing as any other of the enthusiasms of the Russian nature. The universities were by their merits, as by their defects, a very focus of revolution."²¹

¹⁹ Walkin, Jacob, *The Rise of Democracy in Pre-Revolutionary Russia* (New York: Frederick A. Praeger, 1962), pp. 188-189.

²⁰ *Ibid.*, pp. 129-132. Autonomy was withdrawn in 1911; police broke up meetings within the universities and mass expulsions of students, as well as dismissal of professors, occurred.

²¹ Pares, Bernard, *Russia Between Reform and Revolution* (New York: Schocken Books, 1962), pp. 180-181. This book was first published in 1907. For a detailed discussion of the situation of the Russian intelligentsia and their political roles, see pp. 161-282. As Francis B. Randell, the

In China, students played a major role in the downfall of the Manchu Dynasty at the turn of the century. In large numbers, they backed Sun Yat-sen and helped spread radical ideas of modernization and democracy throughout the country.²² Later, with the overthrow of the monarchy in 1911, university students rallied around the ideas of Ch'en Tu-hsiu, a professor at Peking, who called, in effect, for a thoroughly democratic and egalitarian society. Student politics reached a climax in May 1919, when the huge student demonstration which began in Peking inaugurated the second Chinese Revolution. "The movement spread across the country. In it a new note sounded when workers in factories struck in support of the student demands for a new regime."²³ Many of the intellectuals and students who took part in these movements, including Ch'en Tu-hsiu, were to be among the founders of the Chinese Communist Party in 1921. Student movements, demonstrations and strikes played a major role in undermining Chiang Kai-shek during the 1930s as well. They tended to favour a united front between the Kuomintang and the communists.²⁴ In December 1931, a mass student demonstration in the capital, Nanking, demanded immediate united resistance to Japan. After this the student movement turned increasingly to the left and the Kuomintang attempted to suppress it. Again at the end of 1935 and in 1936, massive student demonstrations played an important role in pressing the government to accept the new United Front strategy of the communists and "the effect of the post-war [World War II] student riots was to hasten the downfall of Chiang's government and the communist victory".²⁵

author of the "Introduction" to this edition, states: ". . . we read this book because the Russia it presents is so much like so many backward countries today, poor but slowly rising modern economies. . . . Its *intelligentsia* was a classic example of the nationalist intellectual movement to be found in every backward country. Pares' book is relevant to our many discussions of 'the problem of development' in the many little Russias of the world": p. xi.

²² Kiang, Wen-han, *The Chinese Student Movement* (New York: King's Crown Press, 1948).

²³ Isaacs, Harold, *The Tragedy of the Chinese Revolution* (Stanford University Press, 1961), pp. 53-55.

²⁴ Seton-Watson, H., *The Pattern of Communist Revolution* (London: Methuen, 1953), pp. 190-191.

²⁵ Israel, John, *The Chinese Student Movement, 1927-1937*, Ph.D. thesis,

Historical patterns of student politics comparable to the Russian and Chinese cases may be described for other communist states. Although communist ideology forbids the party from acknowledging the fact that university students have provided both the initial leadership and a large part of the mass base in countries in which the party has taken power on its own, the facts bear out this assertion. That the Castro movement developed from student activities in the University of Havana is well recognized. Less well known is the fact that the Communist Party of Cuba, itself, was founded after a massive student demonstration in the University of Havana. Jose Antonio Mella and other expelled student leftists founded the party in 1925.²⁶ The first Vietnamese communist movement, the Association of Vietnamese Revolutionary Young Comrades, was founded by Ho Chi Minh in 1925 from among "large numbers of young men who had escaped from the repressions following the Hanoi Students' Movement in 1925". Among those veterans of the 1925 Student Movement who joined the communists following its suppression was Pham Van Dong, now Prime Minister of the Democratic Republic of Vietnam.²⁷ The Yugoslav Communist Party also secured a large proportion of its leadership from the student movement. Before World War II, the communist student organization (SKOJ) was much larger than the rest of the movement and its members played a major role in the partisan resistance.²⁸

University Students in Underdeveloped Countries

In the underdeveloped or emerging countries, the critical attitude of the educated strata resembles the reactions of intellectuals in pre-communist Russia and China. Their concern is, from a nationalist standpoint, with the modernization of their country, which would permit it to take its place with the leading countries of the modern world. The long absence of sovereignty adds only a complication to the responses to social, economic, political and History Department, Harvard University, 1963, p. 146.

²⁶ Suarez Rivas, Eduardo, *Un Pueblo Crucificado* (Miami: no publisher indicated, 1964), p. 21.

²⁷ Van Chi, Hoang, *From Colonialism to Communism* (New York: Praeger, 1964), p. 43.

²⁸ Tito, Joseph Broz, *Report to the 5th Congress CPY* (Belgrade: Yugoslavia, 1948), pp. 27-34.

cultural backwardness *vis-à-vis* the then dominant centres of modern civilization. Great Britain, France, Germany—these were the models of modernity and it was the retrograde position of their own country in comparison with one of these countries or with a vague composite image of all of them which provided the point of departure for the radical criticism of their own countries. Where their own countries were under colonial rule, it was only a simple step to link the backwardness of the country with the interests and intentions of the ruling foreign power.²⁹ The attraction of the foreign model was associated with a revulsion against the backwardness of indigenous institutions. At the same time, the politicized students and their older intellectual *confrères* were nationalists and they could not lightly accept their own xenophilia and their own implicit denial of the vitality of their own indigenous inheritance.³⁰

²⁹ Shils, Edward, "Political Development in the New States", *Comparative Studies in Society and History*, II (1960), 3, pp. 272-277. A similar situation existed even in independent Japan. The early appeal of Marxism to Japanese intellectuals, which underlies its success after 1945, is related to its provision of a universalistic justification for Japanese nationalism. As Yuzuru Okada puts it: "many intellectuals were driven by a desire for Japan to catch up with, or even surpass, the West. For them Marxism represented a system that derived from, and was critical of, the social, political, and cultural systems of the West. It appeared to present them with a model of a society of utopian proportions, far exceeding any society that existed at that time in the West. They felt that if they could create a socialist state in Japan, their nation, at a single stroke, would be ahead of the nations of Europe and America. They were emotionally challenged by the possibility of achieving socialism before any nation of the Western world." "Introduction" to special issue dealing with "Japanese Intellectuals", *Journal of Social and Political Ideas in Japan*, II (April, 1964), 1, p. 4. Joseph Ben-David points out that in eighteenth-century France the model to be emulated was Britain, while Germans later sought to copy France. See "Professions in the Class System of the Present Day Societies", *Current Sociology*, XII (1963-1964), 3, p. 273.

³⁰ The "memory" of exploitation by the colonial power is still strong in the consciousness of many of the younger generation, even those born after independence. Thus there is a tendency for the former colonial power to be viewed with mixed feelings, as the source of intellectual prestige and recognition, as well as the former subjugator of the nation, who still exploits the country economically. In Latin America the United States has played this role for students and intellectuals who have seen her, with considerable justice at times, as an economic exploiter. Recent surveys of students in Iran and Pakistan reveal a negative image of the major former

As Seton-Watson has noted, the disproportion between the modern education imparted by the universities in Eastern Europe during the nineteenth and early twentieth centuries and the backwardness of the rest of the nation made sensitive young people painfully aware of the cultural and economic backwardness of their own country. "They belonged to the nineteenth or twentieth centuries. But their less fortunate compatriots in the villages were living in the eighteenth or sixteenth centuries. . . . They felt themselves obliged to serve their peoples, to raise them to their level, and to fight against all those who had, or appeared to have, an interest in keeping them in their backward state."³¹ And the same reforming tendencies which emerged in the universities of Eastern Europe have been paralleled in Latin America: "From the (Latin American) university, came the liberal movements of the 19th century and the progressive movements—Christian or Marxist—of the 20th century. Naturally the ideological *avant garde* did not escape conflicts with the conservatives and the beneficiaries of older socio-political structures. And as these latter held power in the previous generation, there was an effort—unavowed but real—of the political elite to halt the spreading influence of the university."³²

The concern with modernization and development has gone hand in hand with the international stratification system, in which the elite of each nation makes international comparisons and uses international standards to locate themselves as higher or lower with respect to various characteristics which are accorded international prestige.³³ The elites of the emerging nations see themselves as colonial powers, Britain and France, while these students, particularly the Pakistani, are much more favourable to the U.S.A. and Russia. *Student Survey in Pakistan* (Bielefeld: E.M.N.I.D., 1963); *Teheran University Student Survey: Attitudes and Aspirations* (Teheran: National Institute of Psychology, 1963).

³¹ Seton-Watson, H., *op. cit.*, pp. 8-9.

³² Pelaez, Leon Cortinas, "Autonomy and Student Co-Government in the University of Uruguay", *Comparative Education Review*, VII (1963), 2, p. 166.

³³ See especially Lagos, Gustavo, *International Stratification and Underdeveloped Countries* (Chapel Hill: University of North Carolina Press, 1963); Shils, Edward, "Metropolis and Province in the Intellectual Community" in Sovani, N. V., and Dandakar, V. M. (ed.), *Changing India* (Bombay: Asia Publishing Co., 1961), pp. 275-294 and Waelder, R., *op.*

selves and their countries as parts of the suppressed strata of the world, though they themselves may be among the well-to-do not only within their own country but even by a world standard. Awareness or concern with the inferior position of the nation is most acute among those who have received or are receiving a university education, since the culture which that conveys is so obviously part of a universal culture and the university community has such close ties with the international community of scholars and universities.³⁴ Many of its leaders have been trained in the more advanced, higher-ranking nations, and hence are more likely to be especially prone to feelings of national inferiority.³⁵ Those who seek to maintain traditional institutions within the country,

cit., pp. 17-18.

³⁴ The general problem has been conceptualized by Edward Shils as part of the general phenomenon of the tension which exists between the intellectual metropolis and province. The writer or scholar in nineteenth century Eastern Europe sought recognition from Paris or Germany. Then and today, the principal intellectual capitals of Western Europe, and increasingly in recent decades, those of the United States, have "exercised an irresistible fascination on certain strata of the societies outside of the European centre, and the situation was not made any easier to bear by the often explicit derogation of their own culture and society which its admirers encountered . . . in the works and attitudes of intellectuals of the foreign culture to which they were attracted". Shils, Edward, "The Prospects for Intellectuals", *Soviet Survey* (July-September, 1959), No. 29, p. 86; see also his "The Tradition of Intellectual Life", in *International Journal of Comparative Sociology*, I (1960), 2, pp. 180-183.

³⁵ The intelligentsia of the underdeveloped countries are those "who are experiencing internal conflict between allegiance to traditional cultures and the influence of the modern West. . . . An understanding of the intelligentsia can perhaps most readily be gained by examining the case of the 'returned student'. In China particularly, this term has been used to denote the many thousands of young people who produced a powerful ferment within their country after their return from studies abroad. The same pattern occurred in many other countries. It did not matter whether a student had actually studied in a Western country; many took on the characteristics of the 'returned student' simply after exposure to Western culture in . . . schools of their own country". Mehnert, Klaus, "The Social and Political Role of the Intelligentsia in the New Countries", in London, Kurt (ed.), *New Nations in a Divided World* (New York: Frederick A. Praeger, 1963), pp. 122-123. Cf. also Wang, Y. C., "Intellectuals and Society in China, 1860-1949", *Comparative Studies in Society and History*, III (1961), 4, pp. 325-426, and his forthcoming book on the "foreign-returned Chinese student".

who favour only moderate change, are perceived as reinforcing the inferior status of the country.

Thus the conflict between the values of intellectuals and students and of traditional institutions is intensified with an increase in national concern for modernization and for the international position of the country. Although the inherent logic of modern university education is in principle at variance with traditional values even in culturally and linguistically more or less homogeneous countries, the conflict becomes more pronounced in new states where the university and modern cultures are either at present or in the recent past of patent foreign origin and where the language of intellectual communication so often is one which is alien to the indigenous culture.

The behaviour of universities and intellectuals in developing countries should not be perceived solely or even primarily as merely a reaction to changes instigated by others. Rather, as John Friedman has argued, the "modern" intellectuals must be placed alongside those directly concerned with economic innovation as the principal agents of social change and economic growth. "The one is active in the realm of values and ideas, the other in the realm of technology and organization. But the actions of both will tend to undermine the established order of things."³⁶

The university trained "modern" intellectual has three essential tasks, "each of which is essential to the process of cultural transformation: he mediates new values, he formulates an effective ideology, and he creates an adequate, collective (national) self-image".³⁷ These place him in direct conflict with the traditionalist forces in his nation. Thus one of the central tasks of the study of the social requisites for development is the analysis of the conditions which influence the responses of the intellectuals and university students. It is interesting to note that the late C. Wright Mills, in his more direct concern with facilitating political revolution, also suggested that students and intellectuals, rather than the working class, may be an "immediate radical agency of change". As a sociologist, he urged the need "to study these new generations of intellectuals (including university students) around the

³⁶ Friedman, John, "Intellectuals in Developing Societies", *Kyklos*, XIII (1964), 4, p. 514.

³⁷ *Ibid.*, p. 524.

world as real live agencies of historic change".³⁸

The University Situation and the Conflict of Generations

The behaviour of university students in underdeveloped countries, while to some degree identical with or derivative from the characteristics of adult intellectuals in those countries, is also a function of certain elements peculiar to the situation of the university student. University students live on the boundary between the last stage of adolescence, with its freedom from the burdens of adult responsibility, and the first stages of adulthood with its complex of pressing tasks and difficult decisions. University students are generally at an age which is defined as biological adult; many non-students of the same age have often already entered upon adult activities, marry, earn money and spend it as they wish. Students are often at the age where they may vote and marry, and many do both. Yet few university students earn all their livelihood; many remain financially dependent on their parents, and the society at large still treats them in many ways as irresponsible adolescents, permitting and even approving of a certain amount of sowing of "wild oats". They may even violate the laws in various minor ways without being punished. In many societies the university is responsible for student conduct and the corporate autonomy of the university is often a symbol, as well as a bulwark, of the immunity of the students from external authority on their dependent condition.³⁹

Max Weber in his great lecture on "Politics as a Vocation" observed that youth has a tendency to follow "a pure ethic of absolute ends", while maturity is associated with "an ethic of responsibility". The advocate of the first fears that any compromise on

³⁸ Mills, C. Wright, *Power, Politics and People* (New York: Ballantine Books, 1963), pp. 256-259. Mills detailed the many actions by university students as key sources of political opposition and denigrated the political potential of the working class. In discussing the politics of students and intellectuals, he called for "detailed comparative studies of them"; p. 257.

³⁹ As Edwin Lieuwen has pointed out in discussing the participation of the Venezuelan students in revolutionary politics on many occasions in the history of the country: "The autonomous status of the universities has provided the students special licence to participate freely in politics, particularly in revolutionary activities". Lieuwen, Edwin, *Venezuela* (London: Oxford University Press, 1961), p. 164.

matters of principles will endanger the "salvation of the soul"; the proponent of the second fears that an unwillingness to confront the complex "realities of life" may result in "the goals . . . [being] damaged and discredited for generations, because responsibility for *consequences* is lacking".⁴⁰ Thus, if some university students are inclined to be irresponsible with respect to the norms of adult society, they are also inclined to be idealistic. They have not established a sense of affinity with adult institutions; experience has not hardened them to imperfection. Their libidos are unanchored; their capacity for identification with categories of universal scope, with mankind or the oppressed or the poor and miserable, is greater than it was earlier or than it will be later in life. Their contact with the articulated moral and political standards of their society is abstract; they encounter them as principles promulgated by older persons, as impositions by authority, rather than as maxims incorporated into and blurred by their own practice. Increasingly in the modern world, which includes the highly educated sector of the emerging nations, equality, efficiency, justice and economic wellbeing are presented as the values of the good society. Poverty, racial discrimination, caste systems, social inequality, administrative and political corruption, and cultural backwardness are all violations of such principles.⁴¹ In all countries, of course, reality is usually at variance with principles, and young persons, especially those who have been indulged in adolescence, and are alienated from the authority of their elders or of their parents, teachers and other rulers of the institutional system, feel this strongly. Educated young people everywhere, consequently tend disproportionately to support idealistic movements which take the ideologies or values of the adult world more seriously than does the adult world itself.⁴² Youthful idealism, even when

⁴⁰ Weber, Max, *Essays in Sociology*, translated and edited by Gerth, H. H., and Mills, C. Wright (New York: Oxford University Press, 1946), pp. 126-127.

⁴¹ As Talcott Parsons puts it, youth are "inculcated with the major values of the society. . . . However good the current society may be from various points of view, *it is not good enough to meet their standards.*" See "Youth in the Context of American Society", in Erikson, Erik H., (ed.), *Youth: Change and Challenge* (New York: Basic Books, 1963), p. 117.

⁴² For an analysis of both the elements of self-interest and the idealism in student movements in Europe, see Pinner, Frank A., "Student Trade-

it leads to rejection of adult practices, is often "expected and respected. . . . [Thus] in Latin America . . . the young are surrounded by a mystique which seems to make people believe that their views are somehow 'purer' and less corrupt than those of their elders".⁴³ The propensity of highly and even moderately educated youth to be radical, and of older persons to be conservative, is not peculiar to either advanced or underdeveloped countries. Within conservative as well as left-wing groups or parties, youth movements or affiliates tend to give the adult organization trouble by their tendency to demand that the party or church live up to its principles.⁴⁴

In underdeveloped societies, the institutions such as the family, church and school, through which young men and women have had to pass before they entered the university, are usually concerned with transmitting the culture already accepted by the elders rather than inculcating into them a culture which is only in a barely incipient state. An approximately similar situation exists even in "modern" societies but the situation is much more acute in societies in which most of the older generation lives in a traditional indigenous culture much different from the culture the young person encounters in his contacts with the modern sector of his own society. The resulting hostility against the efforts of authority to impose on him a culture with which he has no sympathy disposes him to accept an anti-authoritarian political culture once he becomes interested in political things.⁴⁵

Unionism in France, Belgium, and Holland", *Sociology of Education*, XXXVII (1964), 3, pp. 177-199; and Aron, Raymond, "Some Aspects of the Crisis in the French Universities", *Minerva*, II (Spring, 1964), 3, pp. 279-285.

⁴³ Einaudi, Luigi, "The Drama of the Latin American Student Movement", unpublished paper, 1961, p. 2. Eisenstadt suggests that societies may "evolve an image of youth as the purest manifestation and repository of ultimate cultural and social values". Eisenstadt, S. N., "Archetypal Patterns of Youth", in Erikson, Erik H., *op. cit.*, p. 27.

⁴⁴ See Josephson, Eric, *Political Youth Organizations in Europe, 1900-1950; A Comparative study of Six Radical Parties and Their Youth Auxiliaries*, unpublished Ph.D. dissertation, Columbia University, 1960.

⁴⁵ Karl Mannheim has located the concerns of "adolescents and early adults, particularly students" for major political or social concerns beyond their personal interests, in the "uncertainty and doubt" which results when "one's questions outrun the scope of one's inherited answers". This occurs

The older generations are more attached to traditional norms regarding topics such as familial authority, women's rights, authority, religion, etc., than are the younger. Differences in attitudes are also linked to education; the better educated favour "modern" values.⁴⁶ University students being both younger and more highly educated are specially inclined to diverge from the prescriptions of tradition in their cultural and political beliefs.⁴⁷

It is common for social movements and most parties in developing countries, especially when they are out of power, to have programmes which correspond to many of the vague aspirations and resentments of the younger educated generations.⁴⁸

when the youth learns that there are other values and ways of life different from those urged on him by his family. In seeking distance from his primary environment, "with a sense of liberation . . . the adolescent discovers alternative interpretations and new values. Self-assertion and defiance accompany this new experience". This contact with a variety of possibilities not taught within the family is confusing, and rather than remain in a state of doubt, many youths seek a new certainty in beliefs which are opposed to those taught at home. "Intellectual fanaticism is not the product of a tacitly accepted heritage, but the expression of an anxiety to end the wear and tear of a state of suspense by the adoption of a categorical creed". Mannheim, Karl, *Essays on the Sociology of Culture* (New York: Oxford University Press, 1956), pp. 163-164.

⁴⁶ See Lipset, S. M., "Political Cleavages in 'Developed' and 'Emerging' Polities", in Allardt, Erik, and Littunen, Yrjo (ed.), *Cleavages, Ideologies and Party Systems: Contributions to Comparative Political Sociology* (Helsinki: The Westermarck Society, 1964). For a detailed account of sources of generational conflict between students and their parents in the China of 1935-1937 based on questionnaires filled out by 1,164 university students, see Lang, Olga, *Chinese Family and Society* (New Haven: Yale University Press, 1946), pp. 283-296.

⁴⁷ Fischer, Joseph, "Universities and the Political Process in Southeast Asia", *Pacific Affairs*, XXXVI (1963), 1, p. 13.

⁴⁸ Frederick W. Frey writes: "Having spoken of student activities, one can hardly avoid mentioning the very pronounced 'youth culture' which pervades portions of Turkish life. Mustafa Kemal proclaimed youth 'the owner and guardian of the revolution'—a fact which some segments of Turkish youth will let no one ignore". "Education: Turkey", in Ward, Robert E., and Rustow, Dankwart (ed.), *Political Modernization in Japan and Turkey* (Princeton University Press, 1964), p. 235. The conflict of generations and its consequences for politics in Latin America is discussed in Floria, Carlos Alberto, "Ideas e Ideales Politicos de los Jovenes Latino-americanos", *Occidente*, XVII (August, 1962), 139, pp. 12-17. For empirical research on this topic for Latin America, specifically Uruguay, see

The most dramatic recent demonstrations of university students as the most aggressive proponents of "modern" values have occurred in Korea, Bolivia, South Vietnam and the Sudan, where students together with the army have undone governments. The Syngman Rhee regime in Korea was finally overthrown in 1960 as a result of student demonstrations, and similar activities have been directed against the military regime in 1964.⁴⁹ This latter year has witnessed the downfall of governments in the other three countries following on demonstrations begun by students.

The need of a younger generation to establish its independence corresponds to the tactic of revolutionary movements to seek recruits among those who are not yet integrated into the institutional system. Revolutionary movements give young people an idealistic rationale for breaking with their families, which may be defined as part of the reactionary system. The higher the degree of parental control exercised before youth leave home for university, the more violent the need to demonstrate "autonomy" once they are "free".⁵⁰

Ganon, Isaac, *et al.*, *Nuestro Estudiante Contemporaneo*, mimeographed, Instituto de Ciencias Sociales, Facultad de Derecho y Ciencias Sociales, Universidad de la Republica, Montevideo, Uruguay, 1964, pp. 38-62. Concerning students in Panama, and Latin America generally, as "the only group exerting continuous pressure for socio-economic and governmental reform . . .", see Goldrich, Daniel, *Radical Nationalism: The Political Orientations of Panamanian Law Students* (East Lansing: Bureau of Social and Political Research, Michigan State University, 1961).

⁴⁹ "The students constituted one of the most modernized groups in Korean society, for they grew up after independence and during the period of the massive American military and diplomatic presence. The older people's attitudes had been formed during the Yi dynasty and under Japanese colonial rule. Thus the students were more quick than the general public to feel, perhaps only vaguely and unconsciously, that the process of modernization was at a standstill. They also had a less fatalistic attitude towards the abuse of power by the government. To their more modern minds, Rhee's manoeuvres during the election seemed like anachronistic 'absurdities', as they put it, whereas to the adults, they appeared as merely the most recent manifestations of age-old and inevitable phenomena. The adults suffered more directly from Rhee's repressions than did the students who had no family or economic responsibilities, yet it was the students who acted, not the wage-earners of the professional class." Douglas, William A., "Korean Students and Politics", *Asian Survey*, III (1963), 12, p. 586.

⁵⁰ Hypotheses such as these have been presented to account for the rebelliousness of German youth before World War I, and for Latin American and Japanese students in more recent periods. Laqueur, Walter, *Young*

Resistance to the pressure of adult authorities which try to impel them towards the burdens of adulthood, of regular employment, regular family life, etc., is intensified by uncertainty as to whether the roles towards which they are being impelled will actually be available. The poor employment prospects for university-educated youth in many underdeveloped countries enlarge the reservoir of late adolescent rebellion from which revolutionary politics can draw support.

Students engaged in the courses of study which entail something like apprenticeship for a definite profession, e.g., engineering, medicine and preparation for secondary school teaching, where employment prospects are fair, are likely to be less rebellious than students in courses of study without determinate destinations and in which the pattern of instruction does not require personal contact between teachers and students. The most insecure of all are those without specific aims or prospects and who therefore will have to compete with multitudes of other arts graduates, equally poorly qualified, for a small number of inconsequential posts.⁵¹ In the past decade the rapid expansion of the

Germany (New York: Basic Books, 1962), p. 5; Havighurst, Robert, "Latin American and North American Higher Education", *Comparative Education Review*, IV (1961), 3, p. 180.

⁵¹ The existing data bearing on the subject are fragmentary and inconclusive. Thus a comparison of the student supporters of four Indian political parties—Communist, Socialist, Congress, and the conservative, communal Jan Sangh—reveals, as might be expected, that "commerce" is the subject most frequently studied by those with more conservative party choice, while students in "sociology" economics and anthropology" incline more towards the left. The combined group "philosophy, psychology and education" gives the communists much less support *vis-à-vis* the other parties than any other. Students in the sciences (about a fifth of the sample) seem evenly distributed among the various political positions. Bureau of Social Science Research, *Political Attitudes of Indian Students* (Washington: The American University, 1955), p. 47. In the National University of Colombia, the students in the Faculties of Law and Economics appear to be much more to the left than those in "education, psychology and sociology", who in turn are more radical than those in the natural sciences. Walker, K., "Determinants of Castro Support among Latin American University Students", paper presented at the Seventh Latin American Congress of Sociology, Bogotá, Colombia, July 13-19, 1964, and Williamson, Robert C., "El Estudiante Colombiano y sus Actitudes" (Bogotá: Facultad de Sociología, Universidad Nacional de Colombia, 1962), p. 49. On the

university student population in much of Asia has increased this source of student insecurity. Unemployment or low-status employment awaits many graduates.⁵²

The ecological concentration of universities within a limited area, bringing together many young men and women in a similar situation in life, and isolating them for the most part from the motley routine of adult life contributes to the perpetuation of student restlessness. This is as true of universities in underdeveloped countries as it is of those in advanced countries.

Like a vast factory, a large campus brings together great numbers of people in similar life situations, in close proximity to each other, who can acquire a sense of solidarity and wield real power. In Tokyo there are over 200,000 students on the various campuses. On the other hand, in a study of the students in three faculties in the University of Buenos Aires, Silvert and Bonilla indicate that "the economics group stand well below exact sciences in degree of political activity, and most of the details of such participation just a little below even medicine." The science students were much more likely to report having participated in a street rally or having attended a party meeting than the economists. Silvert, Kalman, and Bonilla, Frank, *Education and the Social Meaning of Development: A Preliminary Statement* (New York: American Universities Field Staff, 1961), pp. 127-128. See also Lipset, S. M., *op. cit.*; and Walker, K., *op. cit.*, pp. 18-19. In student elections in recent years in Buenos Aires, it has become clear that the most radical faculty by far is letters and philosophy, which includes the large Department of Sociology. In Mexico, a detailed study based on interviews in nine universities indicates considerable variation in political opinion among the different faculties. Within the large National University in Mexico City the economics faculty, which includes sociology, was by far the most leftist, with law second. Commerce, engineering and medical students tended to respond more conservatively. *A Study of Opinions of University Students in Mexico* (Mexico City: International Research Associates, 1964), pp. 16-19, 40-43, 123-132.

⁵² Van der Kroef, Justus M., "Asian Education and Unemployment: The Continuing Crisis", *Comparative Education Review*, VII (1963), 2, pp. 173-180, and Shils, Edward, "Indian Students", *Encounter*, XVII (September, 1961), 3, pp. 12-20. Eyde, Lorraine D., "Characteristics and Problems of Indian Universities and their Students", *The International Review of Education*, IX (1963-1964), 4, pp. 461-476. The classic treatment of this subject is to be found in Kotschnig, Walter, *Unemployment in the Learned Professions* (New York and London: Oxford University Press, 1938). See also Altbach, Philip, "Japanese Students and Japanese Politics", *Comparative Education Review*, VII (1963), 2, p. 182, and Shimbori, M., "Zengakuren: A Japanese Case Study of a Student Political Movement", *Sociology of Education*, XXXVII (1964), 2, pp. 233-234.

puses in the city; the comparable figures for Peiping and Calcutta are about 100,000; in Mexico City there are over 65,000; and in Buenos Aires, there are close to 70,000 students in the university. It is relatively easy to reach students; leaflets handed out at the campus gates will usually do the job. These facilitate quick communication, foster solidarity, and help to arouse melodramatic action. The organization of campus life at the new African universities, as well as in the colleges and universities of India and Pakistan, even where the numbers run only into a few thousand, has the same result. The politicians' awareness that students have contributed so much in the past to the independence movements and to revolutionary movements makes them appreciate the students' political potential in the politics of the immediate present.⁵³ They are aware of their value in increasing the size of demonstrations and of the heat which can be given to demonstrations by their youthful excitability.⁵⁴

The Political Situation in the Country at Large

In large measure, student political behaviour is anticipatory adult political behaviour, particularly in developing countries,

⁵³ In Egypt, "students were virtually a distinct social class wooed by the government and opposition parties alike". Berger, Morroe, *The Arab World Today* (Garden City: Doubleday, 1962), p. 311. "... all the major political parties in Venezuela today originated in university groups.... Soon after the present Venezuelan political parties came into existence in the 1930s and 1940s, they appointed directors of student activities who recruited supporters not only in the universities but also in the *liceos*, or high schools." Washington, S. Walter, "Student Politics in Latin America: The Venezuelan Example", *Foreign Affairs*, XXXVII (1959), 3, p. 465.

⁵⁴ An official communist journal, for example, calls attention to the need "to look at the experience gained in the University of Rome, which, with its enrolment of 50,000 not only is a big cultural centre, but represents the greatest concentration of young people in the country". Berlinguer, Giovanni, "In the University of Rome", *World Marxist Review*, VI (February, 1963), 2, p. 60. "Of all the political parties the Japan Communist Party has worked assiduously on students, who are very apparently regarded as an important target of the party's activities". Battistini, Lawrence H., *The Postwar Student Struggle in Japan* (Tokyo: Charles Tuttle, 1956), p. 145. Lucien Pye notes that in Asia generally, "it is the students and the intelligentsia who are seen as likely candidates for communism" by the communist parties. See Pye, Lucien *Guerilla Communism in Malaya* (Princeton University Press, 1956), p. 38.

where even student demands for better universities, teachers, and research facilities are part of the struggle for national development. Consequently, student behaviour will often reflect the state of adult politics, even if in a more extreme reformist fashion.

For the most part, "being dynamic" is the main element in the student political demands addressed to the authorities of their respective countries. "Being dynamic" means making dramatic exertions in the direction of modernity. This entails draconic measures against "remnants of neocolonialism", against chiefs, against foreign enterprisers, having a rapid rate of economic growth and scoring "anti-colonialist" points in the international arena of the United Nations. Governments which give an air of going about their business in a tough-minded and aggressive way appear dynamic. In Iran, students criticized the regime as conservative, while many identify the military government in Pakistan as dynamic. This is clearly brought out in surveys of student opinion in both countries, which asked identical questions. In Iran only 8 per cent, believe that the standard of living is going up for the people, as contrasted with 52 per cent in Pakistan.⁵⁵

Two surveys of "francophone" African students studying in French universities report that majorities of those interviewed stated that there is a conflict of views and/or interests between themselves personally, or the youth of their country generally, and their government.⁵⁶ The proportions indicating such differences were lower among those from the two countries with avowedly radical regimes, Guinée and Mali, than from students from other mainland African states.⁵⁷ However, one investigation which also

⁵⁵ See *Teheran University Study: Attitudes and Aspirations* (Teheran: National Institute of Psychology, 1963), p. 19; and *Student Survey in Pakistan* (Bielefeld: E.M.N.I.D., 1963), pp. 89-90.

⁵⁶ One study which asked whether the respondent himself was in conflict with his government indicates that two-thirds have such a sense of difference. N'Diaye, J. P., *Enquête sur les étudiants noirs en France* (Paris: Realités Africaines, 1963), p. 224. The study which asked whether respondents see a "basic disagreement of aims or interest between the youth of your country and the leaders of your government" reports that 51 per cent see such a conflict. *The African Students in France* (Paris: Institut Français d'Opinion Publique, 1962), p. 48.

⁵⁷ Although neither study reports on the content of the attitudes of the more critical students, one might hypothesize that the critical students in the more communist-oriented states would espouse a more liberal position,

included students from the Malagasy Republic (Madagascar) found that they had the least disagreement with their regime.

The characteristics of the dominant elites, and the connections between those elites and the universities, influence the degree of identification with, or opposition to, government policy by the university community at large, or subsections within it. In his analysis of Japanese educational developments since the Meiji Restoration, Ronald Dore points out that the original opposition to government policies came from the staff and students of the less well-connected private universities which were identified with the various "outgroups" among the middle classes in the larger society. The imperial (state) universities were close to the government and supplied the large majority of the higher civil servants and political leaders of the Restoration time.

By the twenties when industrialists began to exercise more influence on Japanese life, both staff and students began to be attracted by revolutionary ideologies which demanded drastic social changes. In the post World War II period of rapid growth, prosperous capitalism and bourgeois domination of parliament, Dore suggests, the private universities have become much more identified with the regime than the state universities. The latter "have preserved the 'devotion-to-high-principle' strain in the Confucian scholar-ruler tradition of the oligarchy and remain the home of the politically minded intellectual—now typically 'alienated' and forming the nucleus of political opposition."⁵⁸

The extent of concern with politics among students in different countries is in part a function of the degree of tension in the larger polity. It has been argued that the "apparent greater student interest in national politics among Latin American students is probably a reflection of more general political uncertainty and instability in Latin America.... Thus national politics

would feel state power as too coercive—much as in the communist states of Europe; while students from other countries should make their criticism from the collectivist extreme, which is more common among politicized students in non-totalitarian countries.

⁵⁸ Dore, Ronald P., "Education: Japan", in Ward, R. E., and Rustow, D (ed.), *Political Modernization in Japan and Turkey* (Princeton University Press, 1964), pp. 180-187. He is, of course, writing chiefly of the leading state and private universities.

become a matter of concern to everybody."⁵⁹

Where, in a condition of political tension, the existing adult elites and counter-elites are ill-organized and ineffectual, student organizations are likely to become more important in the political sphere. ". . . if young persons can gain sufficient influence to change on occasion the course of national political life, then . . . other power centres must be in such disarray as to elevate the relative power of any organized group".⁶⁰ Thus, countries in which governments may be toppled by the political action of the military, are often the same nations in which student activity is of major significance. Korea, Bolivia, the Sudan and South Vietnam are the most recent cases in point.

The Student within the University

Academic standards are relevant. The greater the pressure placed on students to work hard to retain their position in university or to obtain a good appointment after graduation, the less they will participate in politics of any kind. Such an emphasis on rigorous training will be related to some extent to the professionalization of the teaching staff. Where the staff is part-time, as in most of Latin America, students will be more inclined to give their attention to non-academic concerns, including politics. Students are also more available for politics in universities which do not hold the undergraduates to a demanding syllabus. This is the case in Japan and India. Within the university, of course, similar variations hold. Fields such as the natural sciences, which generally require more concentrated study and work than the arts subjects

⁵⁹ Havighurst, R., "Latin American and North American Higher Education", *Comparative Education Review*, IV (1963), 3, p. 180; or as Kalman Silvert has put it: "The Latin American university student is the child of his parents." "Continuity and Change in Latin America: The University Student", in Johnson, John J. (ed.), *Continuity and Change in Latin America* (Stanford University Press, 1964), p. 225. Parsons argues that the absence of "generalized ideological commitment" among American students reflects "the general political characteristics of the society, which has been a relatively stable system with a strong pluralistic character". "Youth in the Context of American Society", in Erikson, E. H. (ed.), *op. cit.*, p. 113.

⁶⁰ Silvert, K., "Continuity and Change in Latin America: The University Student", in Johnson, John J. (ed.), *Continuity and Change in Latin America* (Stanford University Press, 1964), p. 217.

or the social sciences, will inhibit the inclination of students towards politics. Where there is sufficient concern for standards of instruction and student numbers are accordingly restricted to a level compatible with adequate instruction, as in engineering and medical faculties in India, student indiscipline is less marked.

An analysis of the behaviour of Indian students which seeks to account for differences among universities, indicates that the colleges with better trained and more devoted staffs experience relatively few incidents of student indiscipline. The students most likely to be involved in such activities appear to come from the arts faculties of institutions and departments of low standing which require low *per capita* investment, which do not inculcate into the student a sense of self-esteem in the pursuit of knowledge and which offer fewer employment opportunities.⁶¹

The weak concern for academic standards in India is reflected in the admission standards of many of the larger universities which admit students, some suggest a majority, who do not have the background to carry on university level work “. . . the Vice-Chancellor of one of the greatest and oldest universities in India . . . recognized the futility of his university's task but suggested that it nevertheless fulfilled a social function. ‘We keep tens of thousands of young people off the streets,’ he said, ‘and instead of letting them become delinquents we turn them, instead, into communists.’ ”⁶² That it is possible to restrain student political activity is suggested by a recent study of the Arab world which reports that in “. . . Egypt and Syria, recently, the regime has been . . . successful in curbing political activities by increasing the number of examinations, stiffening the requirements to stay enrolled, trying to emphasize science and technology. . . .”⁶³

Nonetheless, efforts to raise standards in an atmosphere impregnated with traditions of student agitation may themselves

⁶¹ Shils, Edward, “Indian Students”, *loc. cit.*, and Weiner, Myron, *The Politics of Scarcity* (University of Chicago Press, 1962), pp. 184-185.

⁶² Sarkar, Chanchal, *The Unquiet Campus: Indian Universities Today* (Calcutta: The Statesman, 1960), p. 6; another detailed discussion of the nature and sources of student indiscipline may be found in Cormack, Margaret, *She Who Rides a Peacock: Indian Students and Social Change* (New York: Frederick A. Praeger, 1961), especially pp. 174-212.

⁶³ Berger, M., *The Arab World Today* (Garden City: Doubleday, 1962), p. 333.

arouse unrest and political activity. The student generation which is subjected to demands for greater exertion may find their chances to gain a degree reduced. In various parts of Asia there have been "spectacular student demonstrations in recent years, some of them with disturbing political overtones, . . . apparently caused by well-intended government measures to up-grade the curriculum. For example, a recent outburst of student agitation in Pakistan stemmed from the government's attempt to implement the report of the country's Educational Commission pointing the way to a lengthening and improvement of a number of curricula. But stiffer and tougher courses proved burdensome not only on those without the intellectual qualifications, but also on those with but slender means; and angry demonstrations, student strikes and walkouts, even destruction of campus property, have been the result."⁶⁴

In Venezuela, in a deliberate effort to reduce student opposition politics, the University of Caracas adopted a "no repeating rule" in 1963, which provided that a student who failed more than twice was to be dropped permanently from the rolls of the university. This rule, however, was not enforced until the crisis of mid-May 1964, in which the police violated traditional university autonomy in order to arrest students accused of acts of terrorism. When the Rector responded to violent demonstrations against these arrests by announcing that the "no repeating rule" would be strictly enforced, a student strike designed to force the repeal of the rule developed, supported by both communist and Christian democratic student groups. The demonstrations and strike failed, however, when the university administration made it clear that if they continued, all students would be faced with the loss of a year's credit. Much of the success of these efforts to impose more exigent standards depends on the determination of university administrators and the attitude of the public. That students in their opposition to higher standards may be supported by a public which is concerned mainly with increasing the production of university graduates is indicated in Dr Karve's account from India: "It has happened that when the result of a particular examination was rather strict and a larger number of candidates than usual failed, public agitation in the newspapers and on the platform has

⁶⁴ Van der Kroef, Justus M., *op. cit.*, p. 178.

been known to have taken place as a protest against the 'massacre of the innocents'."⁶⁵

Where universities follow the historic Bologna practices of student participation in the government of the university through elections to university bodies, one may expect more political activity among students. In Latin American universities, "generally about one-third of the governing body are students".⁶⁶ "The ideal of the university as a republic in microcosm has been central to student ideology in Latin America since the launching of the Cordoba University Reform Movement in Argentina in 1918... in Latin America the student is used to exercising, or at least demands as his right, a much greater role in the conduct of university affairs than would be dreamed of on a U.S. campus."⁶⁷ University issues such as the quality of teaching, the extent of library facilities and the character of dormitories, are linked in these situations to larger political matters.

Perhaps the best example of the way in which the concern of a student movement for a specifically academic demand, namely, the improvement of the quality of education, may have widespread political consequences is, of course, the famous Latin American University Reform Movement which began in the University of Cordoba in Argentina in 1918. It spread through much of Latin America, demanding a greater emphasis on the social and physical sciences and changes in the university government so as to give increased power to representatives of the staff and students. But regardless of its success in changing the university, the Reform Movement politicized university life in many Latin American countries. Robert Alexander reports: "there is no doubt that after 1918 each generation of students passed on to the next what had become a tradition of intense political activity by an appreciable part of the student body".⁶⁸

⁶⁵ Karve, D. D., "Universities and the Public in India", *Minerva*, I (Spring, 1963), 3, p. 268.

⁶⁶ Havighurst, R., *op. cit.*, pp. 176, 178-179.

⁶⁷ Bonilla, Frank, "The Student Federation of Chile: 50 Years of Political Action", *Journal of Inter-American Studies*, II (1960), 3, p. 312.

⁶⁸ Alexander, Robert, *Today's Latin America* (Garden City: Doubleday Anchor Books, 1962), p. 199. Perhaps the best collection of materials in English on the University Reform Movement is a book of articles by various Latin American scholars and participants in the movement; *Univer-*

The location of a university in or near a capital encourages political activity because national political organizations and personalities are more on the minds of students and are also more available as the foci of thought, agitation and demonstration. Staff members are likewise more politicized and students are more accessible to political agitators. Thus it was that Bengal, and particularly Calcutta, became the first centre of student political agitation—Calcutta was the capital of the British Raj until 1912.

Latin America, Burma and Japan testify to a similar relationship. "With few exceptions the only student organizations that historically have had important roles in political life (in Latin America) are those of the major national universities established in the capital cities."⁶⁹ Student political activity may soon become as high in provincial as in metropolitan universities, however, since those in the less prestigious institutions may feel the need to be politically involved to validate their claim to equal distinction. In Japanese student movements, "leadership is taken

sity Reform in Latin America, Analyses and Documents, published by the International Student Conference; no editor, no place, or date of publication indicated. A basic collection of documents on the movement is del Mazo, Gabriel (ed.), *La Reforma Universitaria*, Vols. I-III (Buenos Aires: Ed. Al Ateneo, 1946). A sampling of some of the large literature on the university, its problems and the Reform Movement, are the following: del Mazo, G., *La Reforma Universitaria y La Universidad Latinoamericana* (Corrientes, Republica Argentina: Universidad Nacional de Nordeste, 1957); Grompone, A., *Universidad Oficial y Universidad Viva* (Mexico, D.F., Biblioteca de Ensayos Sociologicos, Universidad Nacional, not dated); Sanchez, Luis Alberto, *La Universidad Latinoamericana* (Guatemala City: Editorial Universitario de Guatemala, 1949); Mac-Lean y Estenos, Roberto, *La Crisis Universitaria en Hispano-America* (Mexico, D.F.: Biblioteca de Ensayos Sociologicos, Universidad Nacional, not dated); and Mendicta y Nunez, Lucio, and Gomez Robleda, José, *Problemas de La Universidad* (Mexico, D.F.: Biblioteca de Ensayos Sociologicos, Universidad Nacional, not dated); and Cordero, Focion Febres, *Reforma Universitaria* (Caracas: Universidad Centrale de Venezuela, 1959). Recent assessments of the Latin American University are found in Rabotnikov, Abraham, "Panorama de la Universidad Latinoamericana", *Cultura Universitaria* (April-September 1963), No. 83-84, pp. 82-101; and Atcon, Rudolph P., "The Latin American University", *Die Deutsche Universitätszeitung* (February 1962), No. 2, pp. 9-48.

⁶⁹ Silvert, K., "Continuity and Change in Latin America: The University Student", in Johnson, John J. (ed.), *Continuity and Change in Latin America* (Stanford University Press, 1964), p. 212.

by students of the leading universities (located in Tokyo and Kyoto), and most of the participants belong to them. At the same time students in the minor leagues may feel that they must follow the example set by those in the major leagues in order to assure themselves that they are university students too. Thus the same type of movement spreads easily all over the country, and federation is readily accomplished under the leadership of the students in leading universities."⁷⁰

Earlier it was noted that the larger the university, the greater the absolute number of those with dispositions to political activity and the stronger their mutual support, organization and resources. Larger student bodies will also heighten the tendency towards the formation of an autonomous student culture resistant to the efforts of the university administration to control it. Large universities in capital cities are, therefore, especially prone to agitation and demonstrative student politics. The massive demonstrations mounted in Tokyo in opposition to the Mutual Security Treaty between Japan and the United States; in Seoul against a treaty between Japan and Korea; in Buenos Aires against a Bill providing for state support of private (Catholic) universities; in Warsaw and Budapest demanding more freedom; in Paris against the Algerian war; and many others in recent years have been associated with the existence of large universities located in major metropolitan centres, often national capitals, in which students have provided an easily mobilizable population available for opposition to authority.

The greater the number of years the student spends at the university, the greater the likelihood of student political activity. Tenure may be determined not only by actual number of scheduled course years, but by rules pertaining to requirements for a degree. Where the university system permits students to "hang around" for years, to finish at their own discretion, one may find the phenomenon of the professional student, from whose ranks political leaders are likely to be recruited. Shils points to those Indians who "live on in the university or college hostels, not registered, not studying, having nothing academic about them except their residence and their associates. Older, tougher, more

⁷⁰ Shimbori, M., "Zengakuren: A Japanese Case Study of a Student Political Movement", *Sociology of Education*, XXXVII (1964), 2, p. 232.

ingenious, often seductively attractive, these 'professional' students are often the catalysts who agitate lambs into lions."⁷¹ Such a system also permits political parties to maintain paid agents on campus, as occurs in India, Latin America and elsewhere. "The possibility of making a career of being a student over an extended period by moving from one practically autonomous 'faculty' to another, and the extended courses taken by many students, so that the presence of students over 30 years of age does not cause any lifted eyebrows, is a circumstance favourable to the unremarked continuous presence of such agents who have other motives than to get an education."⁷²

Whether students live at home with their families, in university halls of residence, or in "digs" will affect their involvement in politics in particular. The common life in hostel or hall of residence or dormitory enhances the formation of common student attitudes, a consciousness of kind and the readiness to mobilize for organized activity. The *Cité Universitaire* in Paris clearly has facilitated student political activity in recent years. This proposition assumes of course that these common residential arrangements are not attended by strict supervision by adults, where the wardens or other university or college officials stand *in loco parentis*. The relative peacefulness of student life in British and American universities is partly a function of the strength of a tradition in which the teaching staff takes on responsibility for the surveillance and supervision of the students' affairs. The provision of hostels on the continental and Indian styles, where it occurs against a tradition of an almost complete *laissez-faire* attitude on the part of the teaching staff *vis-à-vis* the students, only contributes to turning the halls of residence into centres of agitation.

Living in digs and cafes, in the pattern of the major Latin continental countries, France and Italy, is frequently associated with the emergence of an autonomous political culture among the students and that culture is usually agitational and extremist.

Living at home prolongs the authority of the family over the student and tends to insulate him from university influences.⁷³ The

⁷¹ Shils, E., "Indian Students", *loc. cit.*, p. 17.

⁷² Bakke, E. Wight, "Students on the March: The Cases of Mexico and Colombia", *Sociology of Education*, XXXVII (1964), 3, p. 204.

⁷³ For evidence of this in relationship to Colombia, see Walker, K.,

Indian student study cited earlier indicates that the more conservative the political party, the more likely were its supporters to live with parents or relatives while attending university, while a disproportionate number of more leftist students lived in hostels or in a "private lodge".⁷⁴ In Japan, with its strong radical student movement, the centres of activity are in "the metropolitan areas, especially Tokyo, [which] have the largest proportion of students who are far from home and live either in a dormitory or in a lodging. They are freer as well as lonelier than students who live at home. Their marginality is greater, and they are less controlled—a favourable condition again for student movements."⁷⁵

Similarly, a survey of student political leaders in Santiago, Chile, reports that the "greater freedom of action of students from the provinces, many of whom escape strict parental control for the first time on coming to the university also helps to explain the prominence of provincials."⁷⁶

The quality of the relationships between students and their teachers depends in part on the traditions which have developed within the various university systems and on the student/staff ratio. Where there is a drastic separation between students and teachers, where teachers have other than university employment, or where there is a very great number of students per staff mem-

"Determinants of Castro Support among Latin American University Students", pp. 16-17, cited footnote 51 above. Cf. also the *Calcutta University Commission 1917-1919 Report*, 12 Volumes (Calcutta: Government of India Press, 1919).

⁷⁴ Bureau of Social Science Research, *Political Attitudes of Indian Students* (Washington: The American University, 1955), p. 46.

⁷⁵ Shimbori, K., *op. cit.*, p. 233.

⁷⁶ Bonilla, Frank, *Students in Politics: Three Generations of Political Action in a Latin-American University*, Ph.D. thesis, Department of Social Relations, Harvard University, 1959, p. 253. A study of former communists in four countries, the United States, England, France and Italy, points to a comparable causal pattern in describing the conditions under which many joined the party while in university. "It is certainly true that at the time of joining the party their condition might have been accurately described as 'alienated'. In many cases they were away from home for the first time, adapting to a new setting, exposed to confusing impressions, rejective and iconoclastic with regard to their pasts, and confronted with a political world (during the 1930s) in which militance might readily have appeared to be an appropriate attitude." Almond, Gabriel, *The Appeals of Communism* (Princeton University Press, 1954), p. 215.

ber, the staff will have less direct influence on student behaviour than where the relationship is more that of the apprentice working closely with the master. The relationship between teachers and students is, of course, not exclusively determined by the number of students a teacher must teach. The deference accorded to university teachers within their society will to some extent affect their influence on students. The eminence of teachers in the world of science and scholarship, their interest in their own subject and their academic self-esteem based on their belief in the worthiness of their calling and accomplishment are additional factors which determine whether students become integrated into the structure of the university as an intellectual community connected with the centre of its society or whether they will become attached to an autonomous and more or less alienated student community. Frank Bonilla has said that the relatively low level of competence of professors in Brazil and the consequent lack of respect for them by students is one of the factors which "occasionally makes for excesses and for a hyper-politicization of academic issues" in that country.⁷⁷ An eminent Indian administrator and educator writing of the sources of student indiscipline attributes much responsibility to the fact that "teachers today do not command the respect and affection of their pupils to the extent they did in the past" and suggests various devices to raise the social status of academics.⁷⁸

⁷⁷ Bonilla, Frank, "Education and Political Development in Brazil: Growth Toward Nationhood", mimeographed paper prepared for the Conference on Education and Political Development held at Lake Arrowhead, California, June 25-29, 1962, pp. 13-14. For a general analysis of the way in which large classes, overcrowding and lack of scholarly resources alienates Latin American students from university life, see del Mazo, Gabriel, "La Nueva Crisis de las Universidades Latino-Americanas", *Panoramas*, II (July-August 1964), 10, pp. 95-111.

⁷⁸ See Kabir, Humayun, *Education in New India* (London: Allen and Unwin, 1956), pp. 151-166. Shils has detailed the decline in status, influence and income of Indian academic and other intellectuals since independence. He cites the fact "that in Bombay University more than one-half of the teaching staff had been at one time or another approached by students or friends or kinsmen of students with the intention of obtaining special favors in connection with examinations in return for payment, . . . (as showing) how little respect intellectual life and the standards in which it rests enjoy in the Indian middle classes". Shils, Edward, *The Intellectual*

The high cost of living in large towns and the lack of financial support or opportunity for employment clearly generate student dissatisfaction and unrest in India and Burma, although this does not determine whether their unrest will take a political form or will express itself in other forms of indiscipline. Student poverty fosters and intensifies resentment which frequently focuses on questions of fees, hostel and food charges, etc. The main themes of the resentments of impoverished students, particularly in countries without traditions of part-time student employment or without opportunities for it, are easily adaptable to the major themes of conventional extremist political agitation. Part-time student employment does not really fit into the traditions of university life in most countries—students in underdeveloped countries either come from or aspire to a style of life in which learning and manual work are thought to be incompatible—nor does it fit into the economic situation of those countries. There is, therefore, no remedy for student poverty except further subsidy, or the refusal of admission to indigent students, which is contrary to every assumption of present-day public life, and raises serious questions of policy as to how to deal with unemployed secondary school-leavers.

Alternative Activities

Participation in politics is an alternative to other forms of extracurricular activity. "In Colombia and Mexico, where the extracurriculum is virtually non-existent, at least in the public universities, satisfaction of this leadership ambition must focus on participation in university management and in the opportunity to stimulate, organize and inspire student group action."⁷⁹

between Tradition and Modernity: The Indian Situation (The Hague: Mouton and Co., 1961), p. 107.

⁷⁹ Bakke, E. W., *op. cit.*, p. 203. "In most Near Eastern universities, . . . students have no organized extracurricular activities and little or no personal contact with teachers. . . . Thus, . . . the excess energy of Near Eastern students is easily sucked into the political vacuum," Rustow, Dankwart, "Politics and Westernization in the Near East", in Nolte, Richard (ed.), *The Modern Middle East* (New York: Atherton Press, 1963), p. 89. An analysis of student life in British universities reports there "are about 200 intercollegiate clubs and societies in Oxford and probably three or four times as many in colleges". Zweig, Ferdynand, *The Student in the Age of Anxiety* (London: Heinemann, 1963; New York: The Free Press, 1964), p. 23.

In the United States, organized sports were expressly introduced into colleges and universities to divert the adolescent energy which in many college communities had gone into brawls and "town and gown" riots. Conscious but unsuccessful efforts to manipulate the situation similarly so as to diminish the energy available for political activity have been attempted by some American-run universities in the Arab world: "American universities in the Near East have tried to reduce their [student] political activity, which takes the form of demonstrations and strikes, by providing more opportunities for extracurricular activities such as athletics and clubs of many kinds. The logic behind this policy has been that such hitherto neglected aspects of Arab campus life might drain off the students' political energies into other channels. But this American technique has not worked. The new activities have only given the students additional stages upon which to play their political roles, more opportunities to disagree with one another, more arenas in which to extend their political attitudes on the campus."⁸⁰ In Japan also, during the 1920s, in a conscious effort to counter the growth of student radicalism, 'political societies were banned in the universities, sports were encouraged instead, and the puritanical restrictions on high school love affairs were relaxed in an effort to divert student energies to less dangerous channels'.⁸¹ The traditional pattern could not, however, be overcome.

The mere provision of opportunity for extracurricular activities does not, then, guarantee that all or even most students will make a satisfactory social adjustment. In all societies, some, for reasons of personality, inadequate income, or family background, will find themselves to be "outsiders". Political groups simultaneously gratify the resentment of "outsiders" and give them a dignified position in the course of their activities.

Much of the time which male university students in Western countries do not devote to study or to student societies is devoted to attending to young women. Where the tradition of marriage by arrangement prevails, and women are isolated from men before marriage, this opportunity does not exist. Even the small proportion of young women in the student body in such societies live

⁸⁰ Berger, M., *op. cit.*, p. 333.

⁸¹ Dore, Ronald P., *op. cit.*, p. 185.

within this tradition. They are more carefully watched over by custodians and the young men are too shy and too gauche. That this is not a minor student concern is dramatically revealed in a recent study of Asian students: "In a series of samples of over 1,500 students in four South-East Asian universities who were asked: 'What has been the most serious personal problem which has adversely affected your university studies?', over 80 per cent answered: 'Troubles with the opposite sex'. This did not mean troubles with females with whom relationships had been established but rather the inability to initiate any relationships at all with them. The stories are legion of Rangoon University male students who for months follow, from a distance, female students they admire in the hope that somehow they might be introduced to them. The initiation of the faintest and least erotic heterosexual relationships in Asian universities is hampered by inhibition and uncertainty."⁸²

As a result, students have more time and energy than they can or are willing to use on their studies and they have no satisfactory outlet for them. Their sexual propensities exist in a vacuum.⁸³ The vacuum is sometimes filled by restless and freely floating hostility and sometimes by the precipitation of that hostility into a political form.

Patterns of Recruitment to Universities

There has been an increase in the proportion of university students in underdeveloped countries coming from lower middle class, village and even peasant families, although the last are still very rare. Students from these backgrounds tend to be less sophisticated, less at ease in the language of academic discourse. Despite what seems to be their great seriousness in the pursuit of a "career" through attendance at university, they have more difficulties in settling down. Their pecuniary as well as cultural poverty places them under a great strain. Just what this contributes to the extreme politicization of university students is uncertain. It surely

⁸² Fischer, Joseph, "The University Student in South and South-East Asia", *Minerva*, II (Autumn, 1963), 1, p. 49; and Schlesinger, Benjamin, "Student Unrest in Indian Universities", *Comparative Education Review*, VI (1963), 3, p. 221.

⁸³ Shils, E., "Indian Students", *loc. cit.*, p. 19.

causes distress but whether distress gives rise to extremist political attitudes is not settled. Bonilla believes that it does have such a consequence, at least for Chile. ". . . important segments of student leadership come from lower middle- and working-class families, from the provinces and from among first-generation Chileans (though only 3.2 per cent of the population were foreign-born, 31 per cent of the student leaders had at least one foreign-born parent). In an extremely class-conscious country, all of these are groups with a marked status disadvantage. They are the groups bearing the brunt of existing inequities, the ones with the most to gain from social and political reforms and the individuals most likely to be caught up in the competition for status."⁸⁴

Surveys of Brazilian⁸⁵ and Panamanian law students also suggest that lower class origins tend to render students more political. Brazilian students of lower status background were more likely to believe that such activities should be engaged in regularly than were students from more privileged families.⁸⁶ A study of student attitudes conducted at the University of Ibadan, Nigeria, in 1960, revealed that students whose fathers had lower status occupations were more likely to be affiliated to a political party, and among the affiliated those from lower status backgrounds were more likely to be politically active.⁸⁷

The study of Panamanian law students, which distinguished between "radical nationalists", those who strongly favoured nationalization of the Canal, and "moderates", those who felt less strongly about or who opposed nationalization, supports the hypothesis regarding the class correlates of radicalism. The more radical students disproportionately came from rural or small town backgrounds and low-income families. Their "backgrounds were marginal in a few significant respects which suggest that they may

⁸⁴ Bonilla E., *Students in Politics*, cited footnote 76 above, p. 253.

⁸⁵ Scheman, Ronald L., "The Brazilian Law Student: Background, Habits, Attitudes", *Journal of Inter-American Studies*, V (1963), 3, p. 252.

⁸⁶ On the other hand, students from middle-class backgrounds were found to be more politically active than those from upper- or lower-class backgrounds. The meaning of these divergent results is obscure.

⁸⁷ Hanna, William John, "Students" in Coleman, James S., and Rosberg, Carl G., Jr. (ed.), *Political Parties and National Integration in Tropical Africa* (Berkeley: University of California, 1964), pp. 419, 421.

feel relatively deprived in status".⁸⁸ And an analysis of Brazilian student opinion in a number of universities reported that lower family income tends to be associated with more leftist views.⁸⁹ A survey among college students in various parts of China in 1937 revealed that students in the lowest income group, primarily sons of small landlords and peasants, were most likely to have "radical", essentially communist, political sympathies.⁹⁰

We may wish to distinguish between societies in which admission to university is easy and those in which it is difficult; whether there is mass education, as in the United States, the Philippines, Puerto Rico or Argentina, in which almost anyone who wants to

⁸⁸ Goldrich, Daniel, *Radical Nationalism: The Political Orientations of Panamanian Law Students* (East Lansing: Bureau of Political and Social Research, Michigan State University, 1961), pp. 7, 9, 19.

⁸⁹ *Student Study* (San Paulo: Instituto de Estudos Sociais e Economicos, 1963), *passim*. As noted earlier, Gabriel Almond reported that in terms of "class, ethnic or regional origin" European former communists who joined the party while in university in various countries were of relatively low social status. *Op. cit.*, p. 215. Within a communist nation, Poland, it is interesting to note that the same variable is associated with support for economic egalitarianism, although the operating communist order and ideology stress the need for inequality of income and university students aspire to the financially more rewarding positions. Thus, a Polish study reports, "the higher the position of the student's parents, the less he is in favour of economic equality". Nowak, S., "Social Attitudes of Warsaw Students" *loc. cit.*, p. 100. And in Japan, an analysis of students at the University of Tokyo completed in 1957 found that support for the leftist Zengakuren was associated with lower family socio-economic status. Ozaki, M., "The Third Generation", unpublished translation. It should be noted that almost all students at Tokyo University are from middle-class or higher-class families. There are few children of workers or peasants there. In Iran also, ideological politics is reported to have "its major appeal among students, especially those students of lower middle class connections". Binder, Leonard, *Iran: Political Development in a Changing Society* (Berkeley: University of California Press, 1962), p. 215.

On the other hand, a survey of the opinions of students in three faculties at the University of Buenos Aires indicated that although the differences correlated with mobility are small, the "upwardly mobile elements seem inclined to attach less importance to politics than the stable". Silvert, K. H., and Bonilla, Frank, *Education and the Social Meaning of Development: A Preliminary Statement* (New York: American Universities Field Staff, 1961), p. 104.

⁹⁰ Lang, Olga, *Chinese Family and Society* (New Haven: Yale University Press, 1946), pp. 317-318.

enter a university may do so; and where education is "elitist", based on the assumption that universities should admit only a relatively small elite who meet stringent criteria and have passed through a rigorous system of elimination in the lower schools, as in Britain and the former British African colonies.

Elitist systems tend to assure those who succeed in reaching university a guaranteed place in the upper levels of society. To enter, remain in and graduate from, systems of higher education is all-important. Relatively few drop out through failure or other reasons. Students may realistically expect to enter the elite and thus they tend to identify with the existing one. One may anticipate, therefore, that elitist systems will be less productive of student political unrest than those which do not offer secure paths to success. A study of Nigerian and Sierra Leonean students attending the University College of Sierra Leone⁹¹ provides striking evidence of elite status expectations in two countries where university students form a tiny minority of their age group. When asked: "By the time you are 45, how active are you likely to be in the political life of your country as a whole?", 49 per cent of the Nigerians said they expected to be cabinet ministers (24 per cent) or members of the legislature (25 per cent). Sierra Leoneans were somewhat less sanguine about high-level political careers, but only 35 per cent of them reported that they did not expect to play any significant political role, as contrasted with 27 per cent among the Nigerians.⁹² This is not simply a function of better intellectual and social qualifications on admission or of better prospects after graduation. The pattern of teaching in the "elitist" systems is much more conducive to the incorporation of the student into the university community as a part of the central institutional system. Residence in halls with intimate contact with teach-

⁹¹ It should be pointed out that Fourah Bay College is the oldest institution of higher education in Africa south of the Sahara. It has produced a larger proportion of older administrators, the cultural, ecclesiastical and political elites of West Africa than any other institution in that part of the world.

⁹² Marvick, Dwaine, "Higher Education in the Development of Future West African Leaders: A Survey of the Perspectives of Students at Fourah Bay College, Freetown, Sierra Leone", mimeographed paper presented at the Conference on Education and Political Development held at Lake Arrowhead, California, June 25-29, 1962, Table 17, p. 33.

ers serving *in loco parentis*, smaller classes, tutorial arrangements, isolation in a part of the country not far from, but not easily accessible to, the capital city, as well as a generally patrician, non-populistic, social and political culture all contribute to this result.⁹³

The situation of the Egyptian, Japanese and Indian students, on the other hand, may be cited to illustrate the consequence of a policy of unlimited admission. In these nations, attendance at university has "skyrocketed" since independence, far outstripping the rise in suitable job opportunities. Malcolm Kerr suggests that in Egypt it "is this explosive compound of the high aspirations and self-conscious dignity instilled by university education on the one hand and the frustration and deception imposed by the conditions of the market, that has made university students and graduates a continuing revolutionary force. . . ." Their current support for Nasser rests on his commitment "to provide them with opportunities for successful careers".⁹⁴

In Japan: "Since the end of the war there has been a very spectacular increase in the total number of students enrolled in the higher schools and universities. . . . The proportion of economically poor students has increased at a much higher rate than has the total number of students. . . . The family of the poor student invariably makes a supreme economic sacrifice to get him through college. Nevertheless, only about half of the more than 120 thousand students who graduate annually from the universities are able to find jobs which are in any way commensurate with their level of aspirations and ambitions. With each passing year, it can be anticipated that there will be a steady increase in the number of unemployed or 'improperly' employed university graduates who will be dissatisfied with their lot."⁹⁵

⁹³ At the same time, the students of the University of Ghana, which meets all the criteria of "elitist" education, seem, according to many observers, to be quite alienated from the government of their country.

⁹⁴ Kerr, Malcolm, "Education and Political Development in Egypt: Some Problems of Political Socialization" mimeographed paper for the Conference on Education and Political Development held at Lake Arrowhead, California, June 25-29, 1962, pp. 25-27; see also Berger, M., *op. cit.*, p. 333.

⁹⁵ Battistini, L. H., *The Postwar Student Struggle in Japan* (Tokyo: Charles Tuttle, 1956), pp. 141-142.

The phenomena of increasing university enrolments and a decreasing prospect of access to elite positions for large numbers of university graduates has also occurred to some extent in Latin America. José Enrique Miguens refers to the consequent "deep impression that they are not needed by their societies, that not only are they employed in marginal occupations with minimal [economic] rewards, but they are not accorded gratitude or other forms of social esteem beyond some stylistic flattery in the way they are addressed".⁹⁶

Concluding Observations

This paper has attempted to analyse some of the conditions under which university students, above all university students in underdeveloped countries, reject incorporation into the university as an intellectual community and refuse to accept the existing political and social order of which the university is a part in the political sphere. It has sought also to account for the radical orientation, usually socialist, of their political outlook and activity. It has considered the factors which help account for variations in the direction and intensity of student political orientations, including cultural and social characteristics of underdeveloped countries, the characteristics of the universities in such countries and the characteristics of the students themselves.

In general, it may be said that where the society, the university and the student are committed to the fullest development of research and teaching in an atmosphere of academic freedom, and where adequate resources are available in the form of faculty, libraries, laboratories and financial support, students are less likely to engage in political activities and more likely to allow themselves to be assimilated into the corporate life of the university as an institution devoted to the interpretation of what is inherited, the discovery of new truths, and the training of students to do both of these and to prepare themselves for careers based on these activities. On the other hand, even when these conditions are present, there is an inherent tendency for students to take a critical attitude towards the *status quo*. This critical attitude is

⁹⁶ Miguens, José Enrique, "Radiografías de las Juventudes Latinamericanas", *Occidente*, XVII (October, 1962), 141, p. 20.

the product of a tradition of criticism and alienation, and of the rebellious attitude of youth towards their elders in modern societies; it is also a product of the application of the presumed standards of advanced countries to the behaviour of present elites and the societies they govern.⁹⁷

Many protest movements directed at changes in the university constitution and amenities are not always linked to demands for political changes. Indeed, much of the student indiscipline in some underdeveloped countries has become quite apolitical. Some of it expresses grievances about the conditions of life and study and some of it expresses an amorphous dissatisfaction and hostility with immediate authoritative institutions, without political objects or legitimations. It is particularly important to notice that even though radical and extremist attitudes and actions occur frequently among highly politicized students, many students are not very politicized and, some of them, in so far as they have political attitudes at all, are conservative, moderate or liberal. Thus, a study conducted among students in 22 universities and colleges throughout China in 1937, a period when student radical activity was at its height, revealed wide variation in student ideological orientations. Of some 1,160 students, 10 per cent were "conservative", 14 per cent "fascist", 12 per cent "democratic",

⁹⁷ Although in the main, student politics in the underdeveloped societies tend to be "leftist", there are significant variations from this tendency. Despite their education in more modern orientations within the university, many if not most students in such societies have grown up in traditional surroundings, and some of them disapprove of changes which threaten to alter radically the values with which they were raised. Some evidence for this is contained in a report on surveys conducted in Pakistan, Iran, Thailand and Malaysia, in which students were asked whether a group of nations including Great Britain, France, West Germany, Japan, the United States and Russia, were "too much on the side of reform", "too much on the side of having things as they are" or "about right in their attitudes". The United States and Russia, despite their obvious ideological differences were seen as *excessively favourable to reform* more often than were the other nations listed. *Student Survey in Pakistan* (Bielefeld: E.M.N.I.D., 1963); *Teheran University Study: Attitudes and Aspirations* (Teheran: National Institute of Psychology, 1963); *Malayan Student Study* (Bangkok: Coordination Center for Southeast Asian Studies, 1963) and *Student Study—Thailand* (Bangkok: Coordination Center for Southeast Asian Studies, 1963).

10 per cent "Christian", 19 per cent "radical" (communist) and 16 per cent "nationalist".⁹⁸ In India, a sample of students from 10 universities, when asked to give their preferred choice of government among a number of alternatives, opted 23 per cent in favour of parliamentary democracy as in England, 15 per cent for democracy as in the United States, 18 per cent for democratic socialism, 6 per cent for the Soviet type of socialism, 21 per cent for people's democracy as in new China and 10 per cent for "dictatorship".⁹⁹ And when asked their views concerning civil liberties for minority groups, 36 per cent of these students indicated agreement with the statement, "Steps should be taken right away to outlaw the Communist Party", as contrasted with 52 per cent who opposed such an action and 9 per cent who could not make up their minds.¹⁰⁰

Other countries in Asia in fact reveal considerable political conservatism among university students. Thus a study of opinions in four universities in the Philippines reports that the overwhelming majority gave very pro-American responses in answer to questions concerning the nature of the American social system or about correspondence of the interests of the Philippines and the United States, while much antagonism was evidenced towards both the Soviet Union and Communist China. Almost two-thirds indicated "satisfaction" with the way American "private companies operated their businesses in the Philippines".¹⁰¹

In Malaysia, a study of student opinion at the University of Malaya reported that, when asked to state their preference for government or private ownership of industry, the respondents divided into three almost equal parts, for a mixed system, for private ownership and for government ownership. Seventy per cent reported having a good opinion of Great Britain and the United States, as contrasted with only 14 per cent favourable to the Soviet

⁹⁸ Recomputed from data in Table XV in Lang, Olga, *op. cit.*, p. 316.

⁹⁹ *The Indian Student* (Washington, D.C.: Bureau of Social Science Research, 1954), p. 40. One has the impression that since the beginning of the present decade, the proportion in the last two categories has diminished considerably, without any compensating incorporation into the university community.

¹⁰⁰ *Ibid.*, p. 43.

¹⁰¹ Private, unpublished survey of student opinion in the Philippines.

Union and 7 per cent to Communist China.¹⁰²

In Thailand similar questions answered by students of Thammasat University resulted in even more conservative responses. Forty-five per cent of the Thai students favoured private ownership of industry as contrasted to 25 per cent for government ownership and 27 per cent "mixed" replies. They were also more pro-American than the Malaysians (86 per cent) and more hostile to the Soviet Union and Communist China.¹⁰³

In Latin America too there is substantial evidence that radical and extremist views are far from the only ones to be found among university students. Most recently there has been a decline of the Reformists vote in elections at the University of Buenos Aires, and across the Andes, in the Chilean University elections, a loss of votes for the leftist coalition, F.R.A.P.¹⁰⁴ In Brazil, students, when asked to give their opinions of capitalism, divided almost evenly: 50 per cent answered positively, while 47 per cent were negative. Conversely, 26 per cent stated that communism is "good" while 68 per cent thought it was "bad".¹⁰⁵ A Mexican study based on interviews with students in nine universities also reports considerable ideological diversity, although as a group they seemed much more favourable to socialism than their counterparts in Argentina or Brazil. When asked their opinions of socialism, 57 per cent answered "very good" or "good" as contrasted with 10 per cent who had negative answers. A comparable question about "communism" revealed 25 per cent favourable and 40 per cent negative. And "capitalism" as a system was approved by 29 per cent and termed as "bad" or "very bad" by over 40 per cent of those replying.¹⁰⁶

A recent survey of students in Colombian universities also

¹⁰² *Malayan Student Study* (Bangkok: Coordination Centre for South-east Asian Studies, 1963), pp. 27, 32.

¹⁰³ *Student Study—Thailand* (Bangkok: Coordination Centre for South-east Asian Studies, 1963), pp. 38, 45.

¹⁰⁴ On diversity among Argentinian students in the past see Silvert, Kalman, *The Conflict Society: Reaction and Revolution in Latin America* (New Orleans: The Hauser Press, 1961), p. 166.

¹⁰⁵ *Student Study* (San Paolo: Instituto de Estudos Sociais e Economicos, 1963), responses to question 10 (pages are unnumbered).

¹⁰⁶ *A Study of Opinions of University Students in Mexico* (Mexico City: International Research Associates, 1964), pp. 16-19.

points to the diversity of political attitudes among students. The large majority expressed dissatisfaction with all parties, including the left-wing liberals and the communists. Of those with preferences, about half favoured the parties of government coalition, the official liberals and the conservatives. The communists were backed by 11 per cent of those who expressed an opinion, or 4 per cent of the total sample. But though Colombian students may not identify with any specific reformist or communist ideology, it is important to note that there is a relationship between their satisfaction with their own society and their political opinions. The more dissatisfied students were the least likely to have a preference for any party.¹⁰⁷

The discrepancy between the image of university students in developing countries as predominantly leftist, and the data reported in various opinion surveys, points to the existence of large numbers of students who are indifferent to politics or who, whatever their preferences, do not have intense feelings about political things. The Brazilian study, cited earlier, reports that among students who state that they are "very interested" in politics, 60 per cent have negative attitudes towards capitalism, while among those reporting that they "are not at all interested in politics", only 16 per cent are anti-capitalist. However, 55 per cent of the politically apathetic group indicate hostility to communism, as contrasted with but 37 per cent anti-communist among the very interested.¹⁰⁸ The Mexican study suggests a comparable pattern among students in that country.

Whatever the qualifications which have to be introduced into the picture drawn in the preceding pages, the fact remains that university students in underdeveloped countries constitute a significant proportion of the rebellious elements in their respective societies.¹⁰⁹ As such they play an important part in political life.

¹⁰⁷ "En minoria absoluta los universitarios que tienen interes por la politica", *El Tiempo* 7 June, 1964, p. 7. This study was done under the direction of Professor Istvan Mustog of the Pontificia Universidad Javeriana, Bogotá.

¹⁰⁸ *Student Study* (San Paolo: Instituto de Estudos Sociais e Economicos, 1963).

¹⁰⁹ Thus even in the Philippines, students stand out as a group which contribute "many of the active members of the [communist] party and the participants in front organizations". Taylor, George E., *The Philip-*

But what happens to their political rebelliousness when they cease to be students?

Writing about what happened to the revolutionary students of Czarist Russia of 60 years ago after they had left university, Bernard Pares raised this question and suggested an answer: "What becomes of the ex-student? In fact, he very often ceases to be a reformer when he ceases to be a student, that is, when he becomes a man. He begins to get experience of life and he leaves his ideals behind him. This . . . discounts the political value of the student's ideals. . . . Friends of reason and of liberty must be grateful to the universities for offering at least the nucleus of a protest of principle. In a word, one has much less reason to quarrel with the spirit of self-sacrifice amongst the students than with the instinct of self-interest which so many of them have shown when they passed into the ranks of officialdom."¹¹⁰

Yet it is doubtful whether Pares was right concerning the adult behaviour of student revolutionaries in Russia. Ten years after he wrote, political movement largely led and staffed by the alumni of student protest over-turned Czarist autocracy. Today in many countries, local political experts agree with Pares about the lack of long-term consequences of student radicalism on participants after graduation. In Japan, where there is general agreement that student socialists turn conservative after securing employment leading to positions in business or government, opinion surveys show that more university graduates vote for leftist rather than for conservative parties and that there is a larger socialist vote among the "management and professionals" category than among manual workers.¹¹¹ A Japanese sociologist informed the author that a

pires and the United States (New York: Frederick A. Praeger, 1964), pp. 278, 285.

¹¹⁰ Pares, B., *Russia between Reform and Revolution* (New York: Schocken Books, 1962), pp. 197-198.

¹¹¹ Research Society on Japanese Social Structure, "Special Traits of White-Collar Workers in Large Urban Areas", *Journal of Social and Political Ideas in Japan*, I (August, 1963), 2, p. 78; Suetuna, Z., Aoyama, H., Hyashi, C., and Matusita, K., "A Study of Japanese National Character, Part II", *Annals of the Institute of Statistical Mathematics* (Tokyo), Supplement II (1961), p. 54; Scalapino, Robert A., and Masumi, Junnosuke, *Parties and Politics in Contemporary Japan* (Berkeley: University of California Press, 1961), p. 177.

confidential survey conducted among a sample of young business executives (under 40) reported that a majority voted for the left-wing Socialist Party. In India, also, survey data show disproportionate backing for the more leftist tendencies among the university-educated.¹¹² As in Czarist Russia and the China of some decades past, leftist ideologies, socialism and current varieties of socialism or communism have been strong among the elite because these political tendencies are symbolically associated with modernization, rapid economic development and ultimately with equality, all of these being objectives favoured by the well educated. Capitalism is perceived as being linked to foreign influences, traditionalism and slow growth. Hence many of the younger and better schooled members of the elites, including business executives, often look with favour on or at least are not hostile to leftist tendencies. Such patterns are more common in Asia and Africa than they are in Latin America, but they seem to exist in most of the nations of the "third world".

The Need for Further Research

It is clear that if we are to understand the effects of modern education on the dynamics of change in these countries, it is important not only to study what happens to the student within universities, but also the way in which those who have had a "modern" education and who have become part of the intellectual classes conceive of their society and its system of authority after they have left university.¹¹³ As yet, however, there are even fewer

¹¹² See Indian Institute of Public Opinion, *Monthly Public Opinion Surveys* II (January-April 1957), pp. 9-14; IV (June-September 1959), p. 73; VIII (February 1963), p. 5. However, it should be noted that the Congress Party is dominant among all educational strata. Among those with a "post-graduate" education, 61 per cent favoured the Congress Party and 11 per cent the communists in 1963. In 1959, before the Chinese War, support for communism among the educated was much higher.

¹¹³ It has been suggested that the process of becoming more conservative takes time, and that it may be concealed in many reports of opinion related to education since the bulk of the well educated in the emerging nations are young. An Indian report on communist adherent in Lucknow supports this suggestion. The better educated were the most likely to be communists, but younger college graduates (under 40) gave the communists more support (25 per cent.) than did the older (15 per cent.). *The Indian Student* (Washington, D.C.: Bureau of Social Science Research, 1954), p. 8.

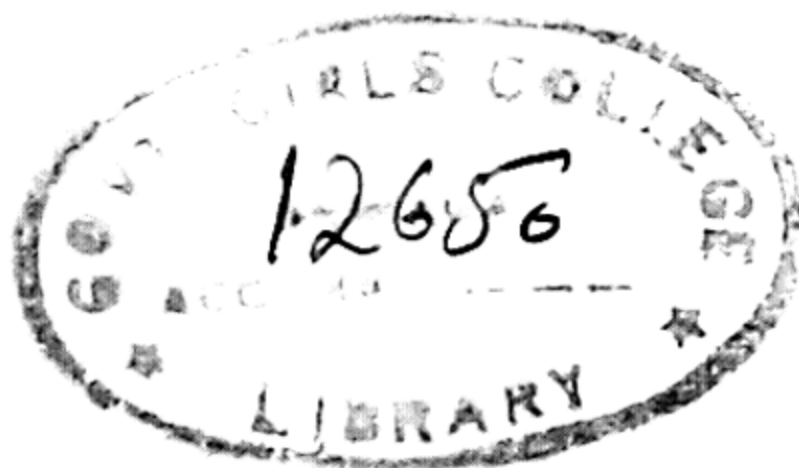
reliable data concerning the attitudes of the adults of the intellectual classes than concerning students.

Our observations of the political effects of university education, or simply of the political correlates of university education, are still in a very primitive state. Indeed, the entire study of universities and their role in the development of the society, polity, economy and culture of their countries is still to be undertaken systematically. There are multitudes of questions requiring answers, but there are few answers. We know little about the influence of the patterns of university organization or the types of courses of study best fitted to train young people to become responsible and effective incumbents of elite positions in countries which seek to modernize themselves. The influence of university studies, patterns of recruitment, modes of teaching, on intellectual, professional, political and cultural standards and aspirations or the assimilation of students into the various spheres of adult activity is still *terra incognita*. Nor are we better informed about the influence of family background, modes of pre-university education and intra-generational relationships on academic and political performance at the university and after graduation.

One major hypothesis of great practical importance asserts that the intense involvement of students in politics is least likely where their universities have very high standards, adequate study and research facilities and a teaching staff deeply committed to teaching and research. Still, the factual basis for this hypothesis is very fragmentary and vague. A really scientific answer would require the comparison of institutions which are similar with respect to size, location, pattern of student recruitment and characteristics of the environing society, but different with respect to their standards, teaching and research staff, library, laboratory provision, etc. Such comparisons between universities within a society should be supplemented by international comparisons, in order to determine the extent to which national variations in culture and in student political traditions account for variations in the extent and character of student political activity.

One could go on multiplying the illustrations of significant research which should be conducted into the role of universities, university teachers and university students in the life of their societies. In the foregoing paper, I have taken only one small section

of this vast and still uncharted domain and attempted to summarize some of the available historical and sociological studies, some quite rigorously quantitative, some impressionistic, some very general, some very particular, and many of them not readily comparable, bearing on this small section. The illumination brought to it by ordering these data should, I hope, be accepted not only for the substantive insight it affords but as an argument for the necessity of more systematic research into the nature and functions of universities in the modern world.



PART 5

SCIENCE AND SCIENTIFIC POLICY

THE REPUBLIC OF SCIENCE

ITS POLITICAL AND ECONOMIC THEORY

MICHAEL POLANYI

MY TITLE is intended to suggest that the community of scientists is organized in a way which resembles certain features of a body politic and works according to economic principles similar to those by which the production of material goods is regulated. Much of what I will have to say will be common knowledge among scientists, but I believe that it will recast the subject from a novel point of view which can both profit from and have a lesson for political and economic theory. For in the free cooperation of independent scientists we shall find a highly simplified model of a free society, which presents in isolation certain basic features of it that are more difficult to identify within the comprehensive functions of a national body.

The first thing to make clear is that scientists, freely making their own choice of problems and pursuing them in the light of their own personal judgment are in fact cooperating as members of a closely knit organization. The point can be settled by considering the opposite case where individuals are engaged in a joint task without being in any way coordinated. A group of women shelling peas work at the same task, but their individual efforts are not coordinated. The same is true of a team of chess players. This is shown by the fact that the total amount of peas shelled and the total number of games won will not be affected if the members of the group are isolated from each other. Consider by contrast the effect which a complete isolation of scientists would have on the progress of science. Each scientist would go on for a while developing problems derived from the information initially available to all. But these problems would soon be exhausted, and in the absence of further information about the results achieved by others, new problems of any value would cease to arise

and scientific progress would come to a standstill.

This shows that the activities of scientists are in fact coordinated, and it also reveals the principle of their coordination. This consists in the adjustment of the efforts of each to the hitherto achieved results of the others. We may call this a coordination by mutual adjustment of independent initiatives—of initiatives which are coordinated because each takes into account all the other initiatives operating within the same system.

When put in these abstract terms the principle of spontaneous coordination of independent initiatives may sound obscure. So let me illustrate it by a simple example. Imagine that we are given the pieces of a very large jig-saw puzzle, and suppose that for some reason it is important that our giant puzzle be put together in the shortest possible time. We would naturally try to speed this up by engaging a number of helpers; the question is in what manner these could be best employed. Suppose we share out the pieces of the jig-saw puzzle equally among the helpers and let each of them work on his lot separately. It is easy to see that this method, which would be quite appropriate to a number of women shelling peas, would be totally ineffectual in this case, since few of the pieces allocated to one particular assistant would be found to fit together. We could do a little better by providing duplicates of all the pieces to each helper separately, and eventually somehow bring together their several results. But even by this method the team would not much surpass the performance of a single individual at his best. The only way the assistance can effectively co-operate and surpass by far what any single one of them could do, is to let them work on putting the puzzle together in sight of the others, so that every time a piece of it is fitted in by one helper, all the others will immediately watch out for the next step that becomes possible in consequence. Under this system, each helper will act on his own initiative, by responding to the latest achievements of the others, and the completion of their joint task will be greatly accelerated. We have here in a nutshell the way in which a series of independent initiatives are organized to a joint achievement by mutually adjusting themselves at every successive stage to the situation created by all the others who are acting likewise.

Such self-coordination of independent initiatives leads to a joint

result which is unmediated by any of those who bring it about. Their coordination is guided as by 'an invisible hand' towards the joint discovery of a hidden system of things. Since its end-result is unknown, this kind of cooperation can only advance stepwise, and the total performance will be the best possible if each consecutive step is decided upon by the person most competent to do so. We may imagine this condition to be fulfilled for the fitting together of a jig-saw puzzle if each helper watches out for any new opportunities arising along a particular section of the hitherto completed patch of the puzzle, and also keeps an eye on a particular lot of pieces, so as to fit them in wherever a chance presents itself. The effectiveness of a group of helpers will then exceed that of any isolated member, to the extent to which some member of the group will always discover a new chance for adding a piece to the puzzle more quickly than any one isolated person could have done by himself.

Any attempt to organize the group of helpers under a single authority would eliminate their independent initiatives and thus reduce their joint effectiveness to that of the single person directing them from the centre. It would, in effect, paralyse their co-operation.

Essentially the same is true for the advancement of science by independent initiatives adjusting themselves consecutively to the results achieved by all the others. So long as each scientist keeps making the best contribution of which he is capable, and on which no one could improve (except by abandoning the problem of his own choice and thus causing an overall loss to the advancement of science), we may affirm that the pursuit of science by independent self-coordinated initiatives assures the most efficient possible organization of scientific progress. And we may add, again, that any authority which would undertake to direct the work of the scientist centrally would bring the progress of science virtually to a standstill.

What I have said here about the highest possible coordination of individual scientific efforts by a process of self-coordination may recall the self-coordination achieved by producers and consumers operating in a market. It was, indeed, with this in mind that I spoke of 'the invisible hand' guiding the coordination of independent initiatives to a maximum advancement of science, just as

Adam Smith invoked 'the invisible hand' to describe the achievement of greatest joint material satisfaction when independent producers and consumers are guided by the prices of goods in a market. I am suggesting, in fact, that the coordinating functions of the market are but a special case of coordination by mutual adjustment. In the case of science, adjustment takes place by taking note of the published results of other scientists; while in the case of the market, mutual adjustment is mediated by a system of prices broadcasting current exchange relations, which make supply meet demand.

But the system of prices ruling the market not only transmits information in the light of which economic agents can mutually adjust their actions; it also provides them with an incentive to exercise economy in terms of money. We shall see that, by contrast, the scientist responding directly to the intellectual situation created by the published results of other scientists is motivated by current professional standards.

Yet in a wider sense of the term, the decisions of a scientist choosing a problem and pursuing it to the exclusion of other possible avenues of inquiry may be said to have an economic character. For his decisions are designed to produce the highest possible result by the use of a limited stock of intellectual and material resources. The scientist fulfils this purpose by choosing a problem that is neither too hard nor too easy for him. For to apply himself to a problem that does not tax his faculties to the full is to waste some of his faculties; while to attack a problem that is too hard for him would waste his faculties altogether. The psychologist K. Lewin has observed that one's person never becomes fully involved either in a problem that is much too hard, nor in one that is much too easy. The line the scientist must choose turns out, therefore, to be that of greatest ego-involvement; it is the line of greatest excitement, sustaining the most intense attention and effort of thought. The choice will be conditioned to some extent by the resources available to the scientist in terms of materials and assistants, but he will be ill-advised to choose his problem with a view to guaranteeing that none of these resources be wasted. He should not hesitate to incur such a loss, if it leads him to deeper and more important problems.

This is where professional standards enter into the scientist's

motivation. He assesses the depth of a problem and the importance of its prospective solution primarily by the standards of scientific merit accepted by the scientific community—though his own work may demand these standards to be modified. Scientific merit depends on a number of criteria which I shall enumerate here under three headings. These criteria are not altogether independent of each other, but I cannot analyse here their mutual relationship.

1. The first criterion that a contribution to science must fulfil in order to be accepted is a sufficient degree of plausibility. Scientific publications are continuously beset by cranks, frauds and bunglers whose contributions must be rejected if journals are not to be swamped by them. This censorship will not only eliminate obvious absurdities but must often refuse publication merely because the conclusions of a paper appear to be unsound in the light of current scientific knowledge. It is indeed difficult even to start an experimental inquiry if its problem is considered scientifically unsound. Few laboratories would accept today a student of extrasensory perception, and even a project for testing once more the hereditary transmission of acquired characters would be severely discouraged from the start. Besides, even when all these obstacles have been overcome, and a paper has come out signed by an author of high distinction in science, it may be totally disregarded, simply for the reason that its results conflict sharply with the current scientific opinion about the nature of things.

I shall illustrate this by an example which I have used elsewhere (*The Logic of Liberty*, London and Chicago, 1951, p. 12). A series of simple experiments were published in June 1947 in the *Proceedings of the Royal Society* by Lord Rayleigh—a distinguished Fellow of the Society—purporting to show that hydrogen atoms striking a metal wire transmit to it energies up to a hundred electron volts. This, if true, would have been far more revolutionary than the discovery of atomic fission by Otto Hahn. Yet, when I asked physicists what they thought about it, they only shrugged their shoulders. They could not find fault with the experiment yet not one believed in its results, nor thought it worthwhile to repeat it. They just ignored it. A possible explanation of Lord Rayleigh's experiments is given in my *Personal Knowledge* (1958) p. 276. It appears that the physicists missed nothing by disregarding these findings.

2. The second criterion by which the merit of a contribution is assessed, may be described as its scientific value, a value that is composed of the following three coefficients: (*a*) its accuracy, (*b*) its systematic importance, (*c*) the intrinsic interest of its subject-matter. You can see these three gradings entering jointly into the value of a paper in physics compared with one in biology. The inanimate things studied by physics are much less interesting than the living beings which are the subject of biology. But physics makes up by its great accuracy and wide theoretical scope for the dullness of its subject, while biology compensates for its lack of accuracy and theoretical beauty by its exciting matter.

3. A contribution of sufficient plausibility and of a given scientific value may yet vary in respect of its originality; this is the third criterion of scientific merit. The originality of technical inventions is assessed, for the purpose of claiming a patent, in terms of the degree of surprise which the invention would cause among those familiar with the art. Similarly, the originality of a discovery is assessed by the degree of surprise which its communication should arouse among scientists. The unexpectedness of a discovery will overlap with its systematic importance, yet the surprise caused by a discovery, which causes us to admire its daring and ingenuity is something different from this. It pertains to the act of producing the discovery. There are discoveries of the highest daring and ingenuity, as for example the discovery of Neptune, which have no great systematic importance.

Both the criteria of plausibility and of scientific value tend to enforce conformity, while the value attached to originality encourages dissent. This internal tension is essential in guiding and motivating scientific work. The professional standards of science must impose a framework of discipline and at the same time encourage rebellion against it. They must demand that, in order to be taken seriously, an investigation should largely conform to the currently predominant beliefs about the nature of things, while allowing that in order to be original it may to some extent go against these. Thus, the authority of scientific opinion enforces the teachings of science in general, for the very purpose of fostering their subversion in particular points.

This dual function of professional standards in science is but the logical outcome of the belief that scientific truth is an aspect

of reality and that the orthodoxy of science is taught as a guide that should enable the novice eventually to make his own contacts with this reality. The authority of scientific standards is thus exercised for the very purpose of providing those guided by it with independent grounds for opposing it. The capacity to renew itself by evoking and assimilating opposition to itself appears to be logically inherent in the sources of the authority wielded by scientific orthodoxy.

But who is it, exactly, who exercises the authority of this orthodoxy? I have mentioned scientific opinion as its agent. But this raises a serious problem. No single scientist has a sound understanding of more than a tiny fraction of the total domain of science. How can an aggregate of such specialists possibly form a joint opinion? How can they possibly exercise jointly the delicate function of imposing a current scientific view about the nature of things, and the current scientific valuation of proposed contributions, even while encouraging an originality which would modify this orthodoxy? In seeking the answer to this question we shall discover yet another organizational principle that is essential for the control of a multitude of independent scientific initiatives. This principle is based on the fact that, while scientists can admittedly exercise competent judgment only over a small part of science, they can usually judge an area adjoining their own special studies that is broad enough to include some fields on which other scientists have specialized. We thus have a considerable degree of overlapping between the areas over which a scientist can exercise a sound critical judgment. And, of course, each scientist who is a member of a group of overlapping competences will also be a member of other groups of the same kind, so that the whole of science will be covered by chains and networks of overlapping neighbourhoods. Each link in these chains and networks will establish agreement between the valuations made by scientists overlooking the same overlapping fields, and so, from one overlapping neighbourhood to the other, agreement will be established on the valuation of scientific merit throughout all the domains of science. Indeed, through these overlapping neighbourhoods uniform standards of scientific merit will prevail over the entire range of science, all the way from astronomy to medicine. This network is the seat of scientific opinion. Scientific opinion is an opinion not held by

any single human mind, but one which, split into thousands of fragments, is held by a multitude of individuals, each of whom endorses the other's opinion at second hand, by relying on the consensual chains which link him to all the others through a sequence of overlapping neighbourhoods.

Admittedly, scientific authority is not distributed evenly throughout the body of scientists; some distinguished members of the profession predominate over others of a more junior standing. But the authority of scientific opinion remains essentially mutual; it is established *between* scientists, not above them. Scientists exercise their authority over each other. Admittedly, the body of scientists, as a whole, does uphold the authority of science over the lay public. It controls thereby also the process by which young men are trained to become members of the scientific profession. But once the novice has reached the grade of an independent scientist, there is no longer any superior above him. His submission to scientific opinion is entailed now in his joining a chain of mutual appreciations, within which he is called upon to bear his equal share of responsibility for the authority to which he submits.

Let me make it clear, even without going into detail, how great and varied are the powers exercised by this authority. Appointments to positions in universities and elsewhere, which offer opportunity for independent research, are filled in accordance with the appreciation of candidates by scientific opinion. Referees reporting on papers submitted to journals are charged with keeping out contributions which current scientific opinion condemns as unsound; and scientific opinion is in control, once more, over the issue of text books, as it can make or mar their influence through reviews in scientific journals. Representatives of scientific opinion will pounce upon newspaper articles or other popular literature which would venture to spread views contrary to scientific opinion. The teaching of science in schools is controlled likewise. And, indeed, the whole outlook of man on the universe is conditioned by an implicit recognition of the authority of scientific opinion.

I have mentioned earlier that the uniformity of scientific standards throughout science makes possible the comparison between the value of discoveries in fields as different as astronomy and medicine. This possibility is of great value for the rational dis-

tribution of efforts and material resources throughout the various branches of science. If the minimum merit by which a contribution would be qualified for acceptance by journals were much lower in one branch of science than in another, this would clearly cause too much effort to be spent on the former branch as compared with the latter. Such is in fact the principle which underlies the rational distribution of grants for the pursuit of research. Subsidies should be curtailed in areas where their yields in terms of scientific merit tend to be low, and should be channelled instead to the growing points of science, where increased financial means may be expected to produce a work of higher scientific value. It does not matter for this purpose whether the money comes from a public authority or from private sources, nor whether it is disbursed by a few sources or a large number of benefactors. So long as each allocation follows the guidance of scientific opinion, by giving preference to the most promising scientists and subjects, the distribution of grants will automatically yield the maximum advantage for the advancement of science as a whole. It will do so, at any rate, to the extent to which scientific opinion offers the best possible appreciation of scientific merit and of the prospects for the further development of scientific talent.

For scientific opinion may, of course, sometimes be mistaken, and as a result unorthodox work of high originality and merit may be discouraged or altogether suppressed for a time. But these risks have to be taken. Only the discipline imposed by an effective scientific opinion can prevent the adulteration of science by cranks and dabblers. In parts of the world where no sound and authoritative scientific opinion is established research stagnates for lack of stimulus, while unsound reputations grow up based on commonplace achievements or mere empty boasts. Politics and business play havoc with appointments and the granting of subsidies for research; journals are made unreadable by including much trash.

Moreover, only a strong and united scientific opinion imposing the intrinsic value of scientific progress on society at large can elicit the support of scientific inquiry by the general public. Only by securing popular respect for its own authority can scientific opinion safeguard the complete independence of mature scientists and the unhindered publicity of their results, which jointly assure

the spontaneous coordination of scientific efforts throughout the world. These are the principles of organization under which the unprecedented advancement of science has been achieved in the twentieth century. Though it is easy to find flaws in their operation, they yet remain the only principles by which this vast domain of collective creativity can be effectively promoted and coordinated.

During the last 20 to 30 years, there have been many suggestions and pressures towards guiding the progress of scientific inquiry in the direction of public welfare. I shall speak mainly of those I have witnessed in England. In August 1938 the British Association for the Advancement of Science founded a new division for the social and international relations of science, which was largely motivated by the desire to offer deliberate social guidance to the progress of science. This programme was given more extreme expression by the Association of Scientific Workers in Britain. In January 1943 the Association filled a large hall in London with a meeting attended by many of the most distinguished scientists of the country, and it decided—in the words officially summing up the conference—that research would no longer be conducted for itself as an end in itself. Reports from Soviet Russia describing the successful conduct of scientific research, according to plans laid down by the Academy of Science, with a view to supporting the economic Five-Year Plans, encouraged this resolution.

I appreciate the generous sentiments which actuate the aspiration of guiding the progress of science into socially beneficial channels, but I hold its aim to be impossible and nonsensical.

An example will show what I mean by this impossibility. In January 1945 Lord Russell and I were together on the BBC Brains Trust. We were asked about the possible technical uses of Einstein's theory of relativity, and neither of us could think of any. This was 40 years after the publication of the theory and 50 years after the inception by Einstein of the work which led to its discovery. It was 58 years after the Michelson-Morley experiment. But, actually, the technical application of relativity, which neither Russell nor I could think of, was to be revealed within a few months by the explosion of the first atomic bomb. For the energy of the explosion was released at the expense of mass in

accordance with the relativistic equation $e=mc^2$, an equation which was soon to be found splashed over the cover of *Time* magazine, as a token of its supreme practical importance.

Perhaps Russell and I should have done better in foreseeing these applications of relativity in January 1945, but it is obvious that Einstein could not possibly take these future consequences into account when he started on the problem which led to the discovery of relativity at the turn of the century. For one thing, another dozen or more major discoveries had yet to be made before relativity could be combined with them to yield the technical process which opened the atomic age.

Any attempt at guiding scientific research towards a purpose other than its own is an attempt to deflect it from the advancement of science. Emergencies may arise in which all scientists willingly apply their gifts to tasks of public interest. It is conceivable that we may come to abhor the progress of science, and stop all scientific research or at least whole branches of it, as the Soviets stopped research in genetics for 25 years. You can kill or mutilate the advance of science, you cannot shape it. For it can advance only by essentially unpredictable steps, pursuing problems of its own, and the practical benefits of these advances will be incidental and hence doubly unpredictable.

In saying this, I have *not* forgotten, but merely set aside, the vast amount of scientific work currently conducted in industrial and governmental laboratories.¹ In describing here the autonomous growth of science, I have taken the relation of science to technology fully into account.

But even those who accept the autonomy of scientific progress may feel irked by allowing such an important process to go on without trying to control the coordination of its fragmentary initiatives. The period of high aspirations following the last war produced an event to illustrate the impracticability of this more limited task.

The incident originated in the University Grants Committee, which sent a memorandum to the Royal Society in the summer of 1945. The document, signed by Sir Charles Darwin, requested the aid of the Royal Society to secure 'The Balanced Development of

¹ I have analysed the relation between academic and industrial science quite recently and in some detail (*J. Inst. Met.* 89 [1961] 401).

Science in the United Kingdom'; this was its title.

The proposal excluded undergraduate studies and aimed at the higher subjects that are taught through the pursuit of research. Its main concern was with the lack of coordination between universities in taking up 'rare' subjects, 'which call for expert study at only a few places, or in some cases perhaps only one'. This was linked with the apprehension that appointments are filled according to the dictates of fashion, as a result of which some subjects of greater importance are being pursued with less vigour than others of lesser importance. It proposed that a coordinating machinery should be set up for levelling out these gaps and redundancies. The Royal Society was asked to compile, through its Sectional Committees covering the main divisions of science, lists of subjects deserving preference in order to fill gaps. Such surveys were to be renewed in the future to guide the University Grants Committee in maintaining balanced proportions of scientific effort throughout all fields of inquiry.

Sir Charles Darwin's proposal was circulated by the Secretaries of the Royal Society to the members of the Sectional Committees, along with a report of previous discussions of his proposals by the Council and other groups of Fellows. The report acknowledged that the coordination of the pursuit of higher studies in the universities was defective ('haphazard') and endorsed the project for periodic, most likely annual, surveys of gaps and redundancies by the Royal Society. The members of the Sectional Committees were asked to prepare, for consideration by a forthcoming meeting of the Committees, lists of subjects suffering from neglect.

Faced with this request which I considered, at the best, pointless, I wrote to the Physical Secretary (the late Sir Alfred Egerton) to express my doubts. I argued that the present practice of filling vacant chairs by the most eminent candidate that the university can attract was the best safeguard for rational distribution of efforts over rival lines of scientific research. As an example (which should appeal to Sir Charles Darwin as a physicist) I recalled the successive appointments to the chair of physics in Manchester during the past thirty years. Manchester had elected to this chair Schuster, Rutherford, W. L. Bragg and Blackett, in this sequence, each of whom represented at the time a 'rare' section of physics:

spectroscopy, radio-activity, X-ray crystallography, and cosmic-rays, respectively. I affirmed that Manchester had acted rightly and that they would have been ill-advised to pay attention to the claims of subjects which had not produced at the time men of comparable ability. For the principal criterion for offering increased opportunities to a new subject was the rise of a growing number of distinguished scientists in that subject and the falling off of creative initiative in other subjects, indicating that resources should be withdrawn from them. While admitting that on certain occasions it may be necessary to depart from this policy, I urged that it should be recognized as the essential agency for maintaining a balanced development of scientific research.

Sir Alfred Egerton's response was sympathetic, and, through him, my views were brought to the notice of the members of Sectional Committees. Yet the Committees met, and I duly took part in compiling a list of 'neglected subjects' in chemistry. The result, however, appeared so vague and trivial (as I will illustrate by an example in a moment) that I wrote to the Chairman of the Chemistry Committee that I would not support the Committee's recommendations if they should be submitted to the Senate of my university.

However, my worries were to prove unnecessary. Already the view was spreading among the Chairmen of the Sectional Committees 'that a satisfactory condition in each science would come about naturally, provided that each university always chose the most distinguished leaders for its post, irrespective of his specialization.' While others still expressed the fear that this would make for an excessive pursuit of fashionable subjects, the upshot was, at the best, inconclusive. Darwin himself had, in fact, already declared the reports of the Sectional Committees 'rather disappointing'.

The whole action was brought to a close, one year after it had started, with a circular letter to the Vice-Chancellors of the British universities signed by Sir Alfred Egerton, as secretary, on behalf of the Council of the Royal Society, a copy being sent to the University Grants Committee. The circular included copies of the reports received from the Sectional Committees and endorsed these in general. But in the body of the letter only a small number of these recommendations were specified as being of special

importance. This list contained seven recommendations for the establishment of new schools of research, but said nothing about the way these new schools should be coordinated with existing activities all over the United Kingdom. The impact of this document on the universities seems to have been negligible. The Chemistry Committee's recommendation for the establishment of 'a strong school of analytic chemistry', which should have concerned me as Professor of Physical Chemistry, was never even brought to my notice in Manchester.

I have not recorded this incident in order to expose its error. It is an important historical event. Most major principles of physics are founded on the recognition of an impossibility, and no body of scientists was better qualified than the Royal Society to demonstrate that a central authority cannot effectively improve on the spontaneous emergence of growing points in science. It has proved that little more can, or need, be done towards the advancement of science, than to assist spontaneous movements towards new fields of distinguished discovery, at the expense of fields that have become exhausted. Though special considerations may deviate from it, this procedure must be acknowledged as the major principle for maintaining a balanced development of scientific research.

(Here is the point at which this analysis of the principles by which funds are to be distributed between different branches of science may have a lesson for economic theory. It suggests a way in which resources can be rationally distributed between *any* rival purposes that cannot be valued in terms of money. All cases of public expenditure serving purely collective interests are of this kind. A comparison of such values by a network of overlapping competences may offer a possibility for a true collective assessment of the relative claims of thousands of government departments of which no single person can know well more than a tiny fraction).

But let me recall yet another striking incident of the post-war period which bears on these principles. I have said that the distribution of subsidies to pure science should not depend on the sources of money, whether they are public or private. This will hold to a considerable extent also for subsidies given to universities as a whole. But after the war, when in England the cost of expand-

ing universities was largely taken over by the state, it was felt that this must be repaid by a more direct support for the national interest. This thought was expressed in July 1946 by the Committee of Vice-Chancellors in a memorandum sent out to all universities, which Sir Ernest Simon (as he then was) as Chairman of the Council of Manchester University, declared to be of 'almost revolutionary' importance. I shall quote a few extracts:

The universities entirely accept the view that the Government has not only the right, but the duty, to satisfy itself that every field of study which in the national interest ought to be cultivated in Great Britain, is in fact being adequately cultivated in the universities

In the view of the Vice-Chancellors, therefore, the universities may properly be expected not only individually to make proper use of the resources entrusted to them, but collectively to devise and execute policies calculated to serve the national interest. And in that task, both individually and collectively, they will be glad to have a greater measure of guidance from the Government than, until quite recent days, they have been accustomed to receive. . . .

Hence the Vice-Chancellors would be glad if the University Grants Committee were formally authorized and equipped to undertake surveys of all main fields of university activity designed to secure that as a whole universities are meeting the whole range of national need for higher teaching and research. . . .

We meet here again with a passionate desire for accepting collective organization for cultural activities, though these actually depend for their vigorous development on the initiative of individuals adjusting themselves to the advances of their rivals and guided by a cultural opinion in seeking support, be it public or private. It is true that competition between universities was getting increasingly concentrated on gaining the approval of the Treasury, and that its outcome came to determine to a considerable extent the framework within which the several universities could operate. But the most important administrative decisions, which determine the work of universities, as for example the selection

of candidates for new vacancies, remained free and not arranged collectively by universities, but by competition between them. For they cannot be made otherwise. The Vice-Chancellors' memorandum has, in consequence, made no impression on the life of the universities and is, by this time, pretty well forgotten by the few who had ever seen it.²

We may sum up by saying that the movements for guiding science towards a more direct service of the public interest, as well as for coordinating the pursuit of science more effectively from a centre, have all petered out. Science continues to be conducted in British universities as was done before the movement for the social guidance of science ever started. And I believe that all scientific progress achieved in the Soviet Union was also due—as everywhere else—to the initiative of original minds, choosing their own problems and carrying out their investigation, according to their own lights.

This does not mean that society is asked to subsidize the private intellectual pleasures of scientists. It is true that the beauty of a particular discovery can be fully enjoyed only by the expert. But wide responses can be evoked by the purely scientific interest of discovery. Popular response, overflowing into the daily press, was aroused in recent years in England and elsewhere by the astronomical observations and theories of Hoyle and Lovell, and more recently by Ryle, and the popular interest was not essentially different from that which these advances had for scientists themselves.

And this is hardly surprising, since for the last three hundred years the progress of science has increasingly controlled the outlook of man on the universe, and has profoundly modified (for better and for worse) the accepted meaning of human existence. Its theoretic and philosophic influence was pervasive.

Those who think that the public is interested in science only as a source of wealth and power are gravely misjudging the situation. There is no reason to suppose that an electorate would be

² I have never heard the memorandum mentioned in the University of Manchester. I knew about it only from Sir Ernest Simon's article entitled 'An Historical University Document,' in *Universities Quarterly*, February 1947, p. 189. My quotations referring to the memorandum are taken from this article.

less inclined to support science for the purpose of exploring the nature of things, than were the private benefactors who previously supported the universities. Universities should have the courage to appeal to the electorate, and to the public in general, on their own genuine grounds. Honesty should demand this at least. For the only justification for the pursuit of scientific research in universities lies in the fact that the universities provide an intimate communion for the formation of scientific opinion, free from corrupting intrusions and distractions. For though scientific discoveries eventually diffuse into all people's thinking, the general public cannot participate in the intellectual milieu in which discoveries are made. Discovery comes only to a mind immersed in its pursuit. For such work the scientist needs a secluded place among likeminded colleagues, who keenly share his aims and sharply control his performances. The soil of academic science must be exterritorial in order to secure its control by scientific opinion.

The existence of this paramount authority, fostering, controlling and protecting the pursuit of a free scientific inquiry, contradicts the generally accepted opinion that modern science is founded on a total rejection of authority. This view is rooted in a sequence of important historical antecedents which we must acknowledge here. It is a fact that the Copernicans had to struggle with the authority of Aristotle upheld by the Roman Church, and by the Lutherans invoking the Bible; that Vesalius founded the modern study of human anatomy by breaking the authority of Galen. Throughout the formative centuries of modern science, the rejection of authority was its battle-cry; it was sounded by Bacon, by Descartes and collectively by the founders of the Royal Society of London. These great men were clearly saying something that was profoundly true and important but we should take into account today, the sense in which they have meant their rejection of authority. They aimed at adversaries who have since been defeated. And although other adversaries may have arisen in their places, it is misleading to assert that science is still based on the rejection of any kind of authority. The more widely the republic of science extends over the globe, the more numerous become its members in each country and the greater the material resources at its command, the more clearly emerges the need for

a strong and effective scientific authority to reign over this republic. When we reject today the interference of political or religious authorities with the pursuit of science, we must do this in the name of the established scientific authority which safeguards the pursuit of science.

Let it also be quite clear that what we have described as the functions of scientific authority go far beyond a mere confirmation of facts asserted by science. For one thing, there are no mere facts in science. A scientific fact is one that has been accepted as such by scientific opinion, both on the grounds of the evidence in favour of it, and because it appears sufficiently plausible in view of the current scientific conception of the nature of things. Besides, science is not a mere collection of facts, but a system of facts based on their scientific interpretation. It is this system that is endorsed by a scientific authority. And within this system this authority endorses a particular distribution of scientific interest intrinsic to the system; a distribution of interest established by the delicate value-judgments exercised by scientific opinion in sifting and rewarding current contributions to science. *Science is what it is*, in virtue of the way in which scientific authority constantly eliminates, or else recognizes at various levels of merit, contributions offered to science. In accepting the authority of science, we accept the totality of all these value-judgments.

Consider, also, the fact that these scientific evaluations are exercised by a multitude of scientists, each of whom is competent to assess only a tiny fragment of current scientific work, so that no single person is responsible at first hand for the announcements made by science at any time. And remember that each scientist originally established himself as such by joining at some point a network of mutual appreciation extending far beyond his own horizon. Each such acceptance appears then as a submission to a vast range of value-judgments exercised over all the domains of science, which the newly accepted citizen of science henceforth endorses, although he knows hardly anything about their subject-matter. Thus, the standards of scientific merit are seen to be transmitted from generation to generation by the affiliation of individuals at a great variety of widely disparate points, in the same way as artistic, moral or legal traditions are transmitted. We may conclude, therefore, that the appreciation of scientific merit too

is based on a tradition which succeeding generations accept and develop as their own scientific opinion. This conclusion gains important support from the fact that the methods of scientific inquiry cannot be explicitly formulated and hence can be transmitted only in the same way as an art, by the affiliation of apprentices to a master. The authority of science is essentially traditional.

But this tradition upholds an authority which cultivates originality. Scientific opinion imposes an immense range of authoritative pronouncements on the student of science, but at the same time it grants the highest encouragement to dissent from them in some particular. While the whole machinery of scientific institutions is engaged in suppressing apparent evidence as unsound, on the ground that it contradicts the currently accepted view about the nature of things, the same scientific authorities pay their highest homage to discoveries which deeply modify the accepted view about the nature of things. It took eleven years for the quantum theory, discovered by Planck in 1900, to gain final acceptance. Yet by the time another thirty years had passed, Planck's position in science was approaching that hitherto accorded only to Newton. Scientific tradition enforces its teachings in general, for the very purpose of cultivating their subversion in the particular.

I have said this here at the cost of some repetition, for it opens a vista of analogies in other intellectual pursuits. The relation of originality to tradition in science has its counterpart in modern literary culture. 'Seldom does the word [tradition] appear except in a phrase of censure', writes T. S. Eliot.³ He then tells how our exclusive appreciation of originality conflicts with the true sources of literary merit actually recognized by us:

We dwell with satisfaction upon the poet's difference from his predecessors, especially his immediate predecessors; we endeavour to find something that can be isolated in order to be enjoyed. Whereas if we approach a poet without this prejudice, we shall often find that not only the best, but the most individual parts of his work may be those in which the dead poets, his ancestors, assert their immortality most vigorously.⁴

³ T. S. Eliot, *Selected Essays*, London (1941), p. 13.

⁴ *Ibid.*, p. 14.

Eliot has also said, in *Little Gidding*, that ancestral ideas reveal their full scope only much later, to their successors:

And what the dead had no speech for, when living,
They can tell you, being dead: the communication
Of the dead is tongued with fire beyond the language of the
living.

And this is as in science: Copernicus and Kepler told Newton where to find discoveries unthinkable to themselves.

At this point we meet a major problem of political theory: the question whether a modern society can be bound by tradition. Faced with the outbreak of the French Revolution, Edmund Burke denounced its attempt to refashion at one stroke all the institutions of a great nation, and predicted that this total break with tradition must lead to a descent into despotism. In reply to this, Tom Paine passionately proclaimed the right of absolute self-determination for every generation. The controversy has continued ever since. It has been revived in America in recent years by a new defence of Burke against Tom Paine, whose teachings had hitherto been predominant. I do not wish to intervene in the American discussion, but I think I can sum up briefly the situation in England during the past 170 years. To the most influential political writers of England, from Bentham to John Stuart Mill, and recently to Isaiah Berlin, liberty consists in doing what one likes, provided one leaves other people free to do likewise. In this view there is nothing to restrict the English nation *as a whole* in doing with itself at any moment whatever it likes. On Burke's vision of 'a partnership of those who are living, those who are dead and those who are to be born' these leading British theorists turn a blind eye. But practice is different. In actual practice it is Burke's vision that controls the British nation; the voice is Esau's but the hand is Jacob's.

The situation is strange. But there must be some deep reason for it, since it is much the same as that which we have described in the organization of science. This analogy seems indeed to reveal the reason for this curious situation. Modern man claims that he will believe nothing unless it is unassailable by doubt;

Descartes, Kant, John Stuart Mill and Bertrand Russell have un-animously taught him this. They leave us no grounds for accepting any tradition. But we see now that science itself can be pursued and transmitted to succeeding generations only within an elaborate system of traditional beliefs and values, just as traditional beliefs have proved indispensable throughout the life of society. What can one do then? The dilemma is disposed of by continuing to profess the right of absolute self-determination in *political theory* and relying on the guidance of tradition in *political practice*.

But this dubious solution is unstable. A modern dynamic society, born of the French Revolution, will not remain satisfied indefinitely with accepting, be it only *de facto*, a traditional framework as its guide and master. The French Revolution, which, for the first time in history, had set up a government resolved on the indefinite improvement of human society, is still present in us. Its most far-reaching aspirations were embodied in the ideas of socialism, which rebelled against the whole structure of society and demanded its total renewal. In the twentieth century this demand went into action in Russia in an upheaval exceeding by far the range of the French Revolution. The boundless claims of the Russian Revolution have evoked passionate responses throughout the world. Whether accepted as a fervent conviction or repudiated as a menace, the ideas of the Russian Revolution have challenged everywhere the traditional framework which modern society had kept observing in practice, even though claiming absolute self-determination in theory.

I have described how this movement evoked among many British scientists a desire to give deliberate social purpose to the pursuit of science. It offended their social conscience that the advancement of science, which affects the interests of society as a whole, should be carried on by individual scientists pursuing their own personal interests. They argued that all public welfare must be safeguarded by public authorities and that scientific activities should therefore be directed by the government in the interest of the public. This reform should replace by deliberate action towards a declared aim the present growth of scientific knowledge intended as a whole by no one, and in fact not even known in its totality, except quite dimly, to any single person. To demand the right of scientists to choose their own problems, appeared to them

petty and unsocial, as against the right of society deliberately to determine its own fate.

But have I not said that this movement has virtually petered out by this time? Have not even the socialist parties throughout Europe endorsed by now the usefulness of the market? Do we not hear the freedom and the independence of scientific inquiry openly demanded today even in important centres within the Soviet domain? Why renew this discussion when it seems about to lose its point?

My answer is that you cannot base social wisdom on political disillusion. The more sober mood of public life today can be consolidated only if it is used as an opportunity for establishing the principles of a free society on firmer grounds. What does our political and economic analysis of the Republic of Science tell us for this purpose?

It appears, at first sight, that I have assimilated the pursuit of science to the market. But the emphasis should be in the opposite direction. The self-coordination of independent scientists embodies a higher principle, a principle which is *reduced* to the mechanism of the market when applied to the production and distribution of material goods.

Let me sketch out briefly this higher principle in more general terms. The Republic of Science shows us an association of independent initiatives, combined towards an indeterminate achievement. It is disciplined and motivated by serving a traditional authority, but this authority is dynamic; its continued existence depends on its constant self-renewal through the originality of its followers.

The Republic of Science is a Society of Explorers. Such a society strives towards an unknown future, which it believes to be accessible and worth achieving. In the case of scientists, the explorers strive towards a hidden reality, for the sake of intellectual satisfaction. And as they satisfy themselves, they enlighten all men and are thus helping society to fulfil its obligation towards intellectual self-improvement.

A free society may be seen to be bent in its entirety on exploring self-improvement—every kind of self-improvement. This suggests a generalization of the principles governing the Republic of Science. It appears that a society bent on discovery must advance

by supporting independent initiatives, coordinating themselves mutually to each other. Such adjustment may include rivalries and opposing responses which, in society as a whole, will be far more frequent than they are within science. Even so, all these independent initiatives must accept for their guidance a traditional authority, enforcing its own self-renewal by cultivating originality among its followers.

Since a dynamic orthodoxy claims to be a guide in search of truth, it implicitly grants the right to opposition in the name of truth—truth being taken to comprise here, for brevity, all manner of excellence that we recognize as the ideal of self-improvement. The freedom of the individual safeguarded by such a society is therefore—to use the term of Hegel—of a positive kind. It has no bearing on the right of men to do as they please; but assures them the right to speak the truth as they know it. Such a society does not offer particularly wide private freedoms. It is the cultivation of public liberties that distinguishes a free society, as defined here.

In this view of a free society, both its liberties and its servitudes are determined by its striving for self-improvement, which in its turn is determined by the intimations of truths yet to be revealed, calling on men to reveal them.

This view transcends the conflict between Edmund Burke and Tom Paine. It rejects Paine's demand for the absolute self-determination of each generation, but does so for the sake of its own ideal of unlimited human and social improvement. It accepts Burke's thesis that freedom must be rooted in tradition, but transposes it into a system cultivating radical progress. It rejects the dream of a society in which all will labour for a common purpose, determined by the will of the people. For in the pursuit of excellence it offers no part to the popular will and accepts instead a condition of society in which the public interest is known only fragmentarily and is left to be achieved as the outcome of individual initiatives aiming at fragmentary problems. Viewed through the eyes of socialism, this ideal of a free society is conservative and fragmented, and hence adrift, irresponsible, selfish, apparently chaotic. A free society conceived as a society of explorers is open to these charges, in the sense that they do refer to characteristic features of it. But if we recognize that these features are indis-

pensable to the pursuit of social self-improvement we may be prepared to accept them as perhaps less attractive aspects of a noble enterprise.

These features are certainly characteristic of the proper cultivation of science and are present throughout society as it pursues other kinds of truth. They are, indeed, likely to become ever more marked, as the intellectual and moral endeavours to which society is dedicated, enlarge in range and branch out into ever new specialized directions. For this must lead to further fragmentation of initiatives and thus increase resistance to any deliberate total renewal of society.

UNDERDEVELOPED SCIENCE IN UNDERDEVELOPED COUNTRIES

STEVAN DEDIJER

"If you give a man a fish, you feed him for one day, if you teach him how to fish, you feed him for many days."

Chinese proverb.

I

I AM writing this paper in the hope that it will come to the attention of a select audience of the presidents and prime ministers of those countries where science does not yet exist on any significant scale.

Roughly five out of six prime ministers in the world belong to this group. Today between 15 and 30 of the 120 countries of the world, with less than one-third of its population, possess practically all of its science. They spend more than 95 per cent of the world's research and development funds in order to produce, first, practically all of the world's research output in the form of research papers, technical reports, discoveries, patents and prototypes of new products and processes, and second, most of the new generation of trained research workers in science and technology. Furthermore, these countries reaped in the past and are now reaping most of the direct economic, political, social and general cultural benefits of scientific research. Finally, during the past twenty years it is mainly these countries which have made the almost simultaneous invention of national research policy as a new institutional mechanism for the development and the use of science to achieve their national objectives.

The other countries—approximately 100 in number—with about two thirds of the world's population, share in various degrees the remaining one-twentieth of the world's science. They are

countries which, either in an absolute or in a relative but very significant sense, have no science.

It has become difficult for these countries to ignore the fact that research is no more than a negligible category in their national division of labour. They cannot avoid being aware that they are essentially pre-research cultures. All kinds of forces, domestic and foreign, political and economic, moral and historical, are acting on the governments of these countries with the inexorability of a law of nature to take some sort of action to promote the development of science in their own countries.

During these past few years it has come to be realized that underdeveloped countries are also countries without science. The evidence is presented in Table I.

The distress over being a scientifically underdeveloped country is beginning to approximate the distress over being an economically underdeveloped one. The growing consensus on the need for simultaneous action on both these problems is reflected in very tangible political actions. The tension between developed and underdeveloped countries is beginning to focus on the scientific gap, in a manner similar to the tension arising from the cleavage between rich and poor countries.

The worldwide discovery that the problem of national development must be coupled to the development of an indigenous science is very recent. Yet, this discovery is now entering into a worldwide consensus.¹ This can be seen, for example, from the activities of many national and international organizations, from the 1,200 papers presented to the UN conference of over 80 countries held on this problem in 1963 in Geneva, from the papers of similar conferences held in Moscow in 1962 and in Rehovoth in 1960, and from numerous papers appearing elsewhere in the world on this subject.

In spite of all the activity and interest in this problem, there is still today a dearth of systematic information and knowledge

¹ Through more intensive contact and communication all countries throughout the world are slowly adopting and pursuing increasingly similar and more compatible national objectives. This seems to me to be a result of greater moral and intellectual consensus and the increased social and political participation of the increasingly educated population in all aspects of the life of the country.

on some of its basic aspects. Furthermore, since the development of science in countries without it has become a political problem for the advanced countries, political constraints have strongly influenced the mode of its presentation, especially at international

TABLE I²

Country	<i>Expenditures on research and development</i>		<i>Consumption of commercially pro- duced energy per capita 1960 (tons equivalent coal)</i>
	% of GNP	\$ per capita	
	1960		
U.S.A. ..	2.8	78.4	8.0
U.S.S.R. ..	2.3	36.4	2.9
U.K. (1961) ..	2.7	35.0	4.9
France ..	2.1	27.0	2.5
Sweden ..	1.6	27.0	3.5
Canada ..	1.2	21.9	5.6
W. Germany ..	1.6	20.0	3.6
Switzerland ..	1.3	20.0	1.9
Netherlands ..	1.4	13.5	2.8
Norway ..	0.7	10.0	2.7
Luxembourg ..	0.7	9.3	—
New Zealand ..	0.6	8.9	2.0
Belgium ..	0.6	7.5	4.1
Japan ..	1.6	6.2	1.3
Hungary ..	1.2	—	2.5
Poland ..	0.9?	5.3?	3.2
Australia ..	0.6	5.3	2.2
Italy ..	0.3?	1.8	1.2
Yugoslavia ..	0.7	1.4	0.9
China ..	—	0.6	0.6
Ghana ..	0.2	0.4	0.1
Lebanon ..	0.1	0.3	0.7
Egypt ..	—	0.3	0.3
Philippines ..	0.1	0.3	0.2
India ..	0.1	0.1	0.1
Pakistan ..	0.1	0.1	0.1

² Table based on the following data: Dedijer, S., "Measuring the Growth of Science," *Science*, CXXXVIII (1962), 3542, pp. 781-788; Kramish, A., "Research and Development in the Common Market vis-a-vis the U.K., U.S. and U.S.S.R.," P-2742 (Santa Monica: Rand Corporation, 1963). Data on Hungary from a Hungarian government publication.

conferences. Calling a spade a spade at these conferences has rarely been considered politically advisable either by the participants coming from the pre-research cultures or those from the developed countries.

II

In this paper I intended to deal with those aspects of research policy for countries without science which, in my opinion, either have been stressed insufficiently in the many otherwise excellent papers or have been passed over in silence at international conferences.

One of these questions is what the principal decision-makers of underdeveloped countries should do about science. Decision-making on science in every social system from the highest to the lowest is difficult and it is most difficult when it involves decisions affecting the scientific life of an entire national society. It is also the least studied and the most neglected aspect of national policy even in developed countries. In countries without science, it is very much more difficult, very much less studied and very much more neglected. The future of science in countries at present without it, and its development and use to achieve the objectives of national leadership depend, much more than in any other field of their national policy, on the interest which they personally take, on their own understanding of it, their own strength of will and their own exertions.

The first effective steps along the road of national development are unthinkable today without using the results of research from the start. It is impossible to estimate your starting degree of development, it is impossible to define your objective, it is impossible to make each step from the first to the second without research in the natural, social and life sciences. An objective estimate of the human and material resources available and necessary for the very first and each subsequent step in development demands the solution by scientists of a series of problems in statistics, demography, sociology, economics, geology, hydrology, geodesy, geography, etc. The efficient development of these resources, whether human, animal or vegetable, demands from the very first a continuous production of scientific knowledge about their specific

properties and potentialities. Practically every decision in any field of national endeavour, whether it is the improvement of the trade balance or community development, requires not only know-how but also scientific knowledge produced by research performed in the local environment. Every aspect of national development policy depends on research conducted within the country, although it must, of course, be based on the achievements of, and conform with, the standards of international science. National development requires a large and continuous production of scientific results; the importation of foreign specialists to produce them is politically and economically intolerable as a long-term arrangement. The development of a national research potential, i.e., qualified scientists, scientific institutions and equipment and a scientific culture within those circles must be created in order to carry out other national policies with any degree of effectiveness. The development of this potential must be regarded from the first not as a luxury but as an inseparable part of the general programme of development. Hence, a policy for the development and the use of science must be from the start an integral part of the national policy. Science policy must be as important a part of the national development policy as economic and educational policy and, perhaps, more important than foreign, military and other policies. To neglect a planned and vigorous development of indigenous research in the physical, life and social sciences endangers the whole process of development.³

Such is the task. How seriously do the underdeveloped countries take that task? Tables II and III aim to show that the development of science, as previously defined was, right up to 1963, both absolutely and relatively, a much smaller public concern in underdeveloped countries than in advanced countries.

In Table II the degree of existence of 'science' as an object of concern is roughly estimated for the three countries by the

³ At the Geneva conference this lesson was not so strongly emphasized and not so evident as the first one. The number of papers submitted to the section on science policy was smaller than the number submitted to any other section, amounting only to 2.8 per cent. of all the papers. This shows that the awareness of the importance of science policy is relatively embryonic among scientists and scientific administrators in the developed countries themselves, since the papers for the conference came largely from them.

number of papers, articles, books, etc., published in those countries during 1960 on the development of national science. Table III compares the awareness of science for 80 countries which participated in the Geneva conference. In this table, the participation in terms of number of delegates and papers submitted to the conference has been used to compare the degree of concern with scientific policy and the application of science to social development. Though these measurements are extremely rough and apply only very generally, one can see from them that actual effort on behalf of science (as manifested in expenditure on science) and a general extra-governmental awareness of its importance are closely associated with each other.

TABLE II

<i>Country</i>	<i>Population Yugoslavia = 1.0</i>	<i>Research effort % GNP spent on R & D</i>	<i>Awareness—amount of published discus- sion of social, cul- tural and economic importance of science (Pakistan = 1.0)</i>
Pakistan	4.5	0.1	1
Yugoslavia	1.0	0.7	50
United Kingdom	2.5	2.3	300
All data for 1960			

TABLE III⁴

<i>National income per capita (\$) (estimates)</i>	<i>% GNP for R & D</i>	<i>Participation in Geneva conference Delegates Papers submitted (per million population)</i>
		<i>No. countries</i>
100	0.1	34
200	0.5	18
< 500	< 1.0	17
> 500	> 1.0	15

⁴ Compiled from United Nations Conference on the Application of Science and Technology for the Benefit of Less Developed Areas, *List of Papers* E./Conf.39/Inf.3, January, 1963; *Directory of Participants*, E./Conf.39/Inf.7, February, 1963, also *Addendum 1* and *Addendum 2* to the *Directory of Participants*.

In underdeveloped countries there is less awareness in general public opinion of the importance of science and this is intimately and reciprocally connected with the low priority given to science in development policy and to the carelessness about the cultivation of a scientific potential necessary to produce that science. The farmer, the craftsman, the educator, the civil servant and the politicians in these countries do not see the relevance of science to their concerns. And of course, in underdeveloped countries, there is not a scientific public. There are few scientists or persons who have some measure of scientific education and who follow other professions. There is therefore no representation of the interests of science, no 'pressure group' for science, no one to remind the influential section of the population of the need to develop and to apply science. This vicious circle which links the unawareness of the importance of science with its feeble institutional existence and can be broken only by decisions and actions emanating from the central institutional system of the society, from the political elite or from those closely bound up with them and capable of influencing them. There will be no science in the underdeveloped countries unless their political elite become aware of the need for it for their national progress and come sufficiently to appreciate the conditions under which it can be successfully implanted. The first task of the government of such a country, and of its prime minister, is to take the decisions necessary for the creation of scientific institutions, adequately staffed and equipped, and to place them into the right relationships with the educational system, government departments, economic institutions and the organs of public opinion.

Yet, everything so far points to the fact that the prime ministers of countries without science have not yet as a rule (which as every rule has its exceptions) learnt any of the above lessons; they have not even discovered the problem. As a rule, they consider science policy and the development of research work a much less important national problem than their opposite numbers in the advanced countries. One need only compare the programmatic speeches and declarations of prime ministers of countries without science with those of the leaders of such developed countries as the U.S.A. or U.S.S.R. to find out how little attention they have devoted to science and research policy. A similar comparison

made between the major political parties and parliamentary bodies of underdeveloped and advanced countries provides similar evidence that there is far too little awareness of the importance of science among the political leaders of the former and the institutions which they control. The development of science in the underdeveloped countries needs, together with much else, a matrix of affirmative and informed opinion within and around the political elite.

III

How can this opinion be created where it is now lacking? I would like to make the following suggestion: each prime minister should establish in his office a secretary for science. An intelligent young man with a good undergraduate training in science should be sent to spend a year at the science office of the OECD, at one of the national science policy bodies of the advanced countries (such as the National Science Foundation or Office of the Advisor of Science and Technology in the United States, or at the Science policy seminars at Harvard or Chicago, or, were it possible, to their counterparts in the Soviet Union, and other countries). He could then be expected to undertake the following tasks: prepare information on problems of the development of science abroad and on the state of science within the country and its problems of growth. He should cooperate with the prime minister's chief of cabinet to ensure that his summary reports on science policy questions constitute an important part of the reading material for the prime minister, that domestic and foreign scientific personalities take more than a negligible part of his time and that questions dealing with science policy are frequently placed on his cabinet's agenda.

Furthermore, steps should be taken to ensure that all members of the cabinet, all branches of government and all leaders of political parties (if more than one) should have access and be exposed to material on the country's scientific policy problems. Even short courses on the importance and modes of interaction of science and society in general and in their own society in particular, held for cabinet members, key parliamentarians and leaders

of the key economic sectors would not be amiss.⁵

Journalists and broadcasters should be urged to use their media of communication to arouse the interest of the broader, more or less educated sections of the public on the value of science. It should be arranged that the embassies, high commissions, etc., obtain all publications, reports, etc., concerning science policy originating in the countries to which they are accredited. Copies of these should be sent to the prime minister's secretary for scientific affairs to foster the increase of the social status of the country's scientists and to establish personal and wide contacts with the nascent scientific community.

Those responsible for the industrial and agricultural development of the country should be helped to become aware of the importance of the results of scientific research for the solution of their current problems.

A central research organization should be established, which will not only have the responsibility of fostering research, but which will also be placed in a position to increase the awareness of the importance of science among all the important decision-making sectors of society, and to establish and support within the universities the academic study of problems of the growth of science within the country.

The government of each country should ensure that foreign aid programmes include systematic advice and material help in the establishment and cultivation of scientific research within the country.

Of course all these actions will be of consequence only if the most strenuous exertions are made to promote the conduct of creative scientific research. Scientific teaching and research in the university must be accorded the highest priority. Financial support, administrative facilities, freedom from red tape in the importation of equipment must be provided. Special care must be taken within universities and research organizations to see that creative research is not sacrificed to administrative protocol, to see that young scientists fresh from their advanced degree research are not sacrificed to older men whose interests are largely administrative. Great care will have to be taken to see that the small scientific community and its even smaller subdivisions are not allowed to wither away in isolation, to lose contact with each

⁵ This has been done in some developed countries.

other, with their peers in neighbouring countries and with their colleagues, teachers and former fellow-students in the wider international scientific community.

IV

'The soil of X is deeply inimical to the growth of science', a scientist from a highly developed country recently stated in a private letter after visiting an underdeveloped country known for its prime minister's awareness of the importance of science. His statement expresses what every scientist or scientific administrator I have met has said about the situation in underdeveloped countries. I have repeatedly met scientists from underdeveloped countries, who have made such statements as: 'My country wants neither me nor any other scientist', or 'The government of my country is inimical to science', etc. The reluctance of the highly trained young scientist from an underdeveloped country to return to his own country upon completion of his training is not simply attributable to deficient patriotism or enslavement to the money bags and flesh-pots of the advanced countries. In many cases it is motivated, at least in part, and in some cases it is entirely motivated by the knowledge that it is difficult to do good research in their own countries. Not only is equipment and financial provision incomparably poorer than it is in the advanced countries, but scientific administration is usually far more bureaucratic and antipathetic to the needs of scientists for freedom from petty controls. Moreover at home, scientists are few and isolated; there are too few for stimulating interaction and there is none of the atmosphere of excitement which arouses curiosity.

The sources—institutional, cultural, psychological, economic and political—which give rise to such widespread beliefs about the uncongeniality of the condition of the underdeveloped countries must be understood and dealt with if science is to grow there. Although widespread public understanding is desirable, it is especially urgent that the head of government of such a country understands the necessities of a scientific policy, for he has at his disposal the only institution and the only resources that can initiate and support the institutions necessary for the growth of science.

The cultural obstacles to the growth of science in the under-

developed countries come from a plurality of sources, traditional and modern, indigenous and exogenous. To begin with there was no such thing as modern systematic, theoretically oriented science or scientifically based technology in the traditional indigenous cultures, even of those countries inheriting the great world religions. There was some empirical medicine, some astronomy and mathematics, but little else. Certainly what we call the scientific outlook, the belief in the value of systematic and persistent observation as a means of discovering the coherence and determinateness of the natural order of existence, was not widely diffused in any of these traditional cultures. Such indigenous science as had once existed has long since died away and no traces of it are still active in the contemporary form of these traditional cultures. In the modern sector of the cultures science has not played a large part. The educational system, beside the fact that it left most of the population untouched, had very little scientific content. The universities were primarily literary and abstract in their orientation, the civil services were modelled on the metropolitan services which stressed humanistic, legal and administrative studies (occasionally mathematics) as preparation for entry, and politics naturally had no place for science—even radical and socialist politics which spoke of planning and of 'scientific socialism'. This was approximately the cultural situation of science on the accession of independence and it has not changed greatly since then.

Curiosity, the pleasure of discovery, the readiness to discard previously held views in the face of new observations and new theories have not begun to spring from minds still rooted in the indigenous traditional and colonial modern cultures. The institutions which generate such dispositions and which keep them alive are difficult to create. They involve an intricate structure of relations within departments, of departments within faculties, faculties within universities, universities in relation to public authority, governmental research institutions and many others. These are only the most external aspects of the system. More fundamental are the normative and motivational systems, the models of action in past and present, which underlie and permeate the social relationships. In any case, they scarcely exist at present in underdeveloped countries.

Underdeveloped countries are pre-research cultures lacking the

institutional and motivational elements. Hence, they are basically alien or hostile to almost every aspect of research and the utilization of its results. The embryonic science developing in this environment will show in every one of its cells, that underdeveloped countries have underdeveloped decision-makers on science, underdeveloped research councils and science advisers, underdeveloped administrators of science and underdeveloped scientists. It is not that scientists in underdeveloped countries are technically untrained or technically incompetent; it is rather that, being a part of their national culture, they will themselves lack, or will not be able to impose or recreate in their society and culture, so alien to science, those fundamental orientations (if they have them) which are necessary for really productive research.

It is under such conditions that political leaders will have to promulgate policies and execute decisions on science. They will be without the support of these three major, more or less autonomous sectors of society which, in the advanced countries, contribute so much to the growth of science:

- (1) A scientific community with its own institutions of training, research and communication and its own scientific tradition.
- (2) A government apparatus—politicians and civil servants—with a tradition in dealing with science, making some provision for it or at least appreciating its intellectual and practical value.
- (3) Industrial, agricultural, commercial, educational, medical, military and other institutions, which have learnt the value of the results of research and have learnt to make more or less reasonable demands for them on the scientific community and the government.

There is another constraint further complicating the conditions under which the political leaders of underdeveloped countries must work in general and on science in particular. Foreign pressures and domestic centrifugal forces give rise to grave political, economic and social strains and instabilities in every underdeveloped country. In those where the prime ministers are endeavouring to modernize, these strains and instabilities are

incomparably greater. The political elite are especially prone to experience these strains which threaten all their past and future achievements. Their response to those threats is to block free communication, with the result that they fail to learn what science can offer them, and they also render the conditions in their countries even more unattractive to their own and expatriate scientists.

So we see that, in dealing with science, a series of pitfalls and traps are set for the political elites of underdeveloped countries. Their own lack of knowledge, experience, the underdeveloped cultural environment of which they are parts and which influence the formulation and execution of their decisions, and their own sensitivity to real and imagined threats to the stability of their countries, all help to obscure their vision.

Because of these factors the political elites of underdeveloped countries will be even more prone to make mistakes about science than their colleagues in the developed ones, no matter how able they are personally or how much they are aware of the general importance of science. Even when they try to make research activity a part of the national division of labour, they can foster a series of malformations in their scientific institutions, which might take a long time to diagnose and cure.

v

The present supermarket of world science contains so many attractive goods so expensive for the purse of the underdeveloped country, that only through judicious budgeting of their resources can they buy those most suitable for their capacities and useful for their particular practical and scientific purposes. Every decision on science because of the nature of research and our ignorance is liable to be much more complicated, much more uncertain and hazardous than almost any other type of decision. Even in countries with the most developed science, decisions about it are bound to be leaps into the dark by more or less blind men. Then, of course, in addition to the sheer element of unpredictability inherent in scientific research, many other factors enter into decisions in scientific policy. Ideology, concerns of political and economic advantage, even the pressure group-like action of particular sectors of the scientific community can influence decisions in scien-

tific policy. In underdeveloped countries, ignorance, prejudice and the absence of sources of reasonable advice render such decisions much more difficult, their success much more problematic. There, because of the lack of check and balance within and by the scientific community and other institutions, e.g., industrial and military, with some experience in dealing with science and because of the lack of 'personal', if not technical knowledge, of the nature of research work, decision-making on science is liable to go even more astray than in advanced countries.

The small number of scientists, the gerontocratic tendencies of the traditional culture, the hierarchical civil service traditions of the modern sector of the society, the concern for national prestige and for 'monuments', the preoccupation with metropolitan models, plain fraudulence among many of those who offer themselves as advisers, are only a few of the many impediments to rational science policies. In underdeveloped countries, powerful and misinformed military, economic or political interests, native scientists with real or fictitious scientific achievements and no experience in science management are capable of sending science expenditures down the drain for years on completely unrealistic projects, simply because the decisions were made *ad hoc*, without an open discussion on the basis of widely gathered information and advice from home and abroad.

To reduce the probability of such outcomes every decision on science must be part of a national plan for the development and use of the results of research. Science must be looked upon as part of a planned national policy. The formulation and control of the execution of research policy and its continuous improvement has to be one of the constant major tasks of the highest political leader of an underdeveloped country. This means that he must participate in the basic decisions on all of the key components of a national science policy. This means that he must take personal responsibility for the principal national objectives to be reached by the existing research potential of the country; the planning of the growth of various elements of this research potential, such as scientific and technological manpower, training and research institutions, equipment and buildings, scientific publications, financial support; long-range research programmes; the distribution of scientific potential with respect to the prospective

productive forces of the country and with respect to the principal goals to be reached through science. This calls for decisions on priorities in the establishment of institutes for such basic survey services as geodesy, meteorology, demography, geology, pedology, hydrology, etc.; for institutes in basic and applied research and development in natural, social and life sciences; research institutes for work in special fields like nuclear energy, automation, military research, etc.

The political leader of an underdeveloped country must also see to it that distribution of the research effort and the research potential between the government, the economy and the universities is an optimal one which serves the needs of the former and does no harm to the latter. He must also attend to the phasing of the scientific effort and of the utilization of the scientific potential. In other words, he must give personal attention to the drafting of a plan for the development of science and its continuous revision in the light of past mistakes and emergent tasks.

Finally, the president or prime minister must initiate or support a series of decisions on measures which aim at making research productive of intellectual and technological results. To be able to accomplish this tremendous task, it will be incumbent on the political leader to remember that there is no such thing as spending too much on research and development.

VI

Investments in science, though giving abundant returns of all kinds including money, are not 'get-rich-quick' investments. The hope, most often unrealized, for quick and bountiful returns from investments in apparently more urgent undertakings gives rise to a situation in which research expenditures are pushed lower and lower on the list of investment priorities of the underdeveloped countries. As may be seen on Table I, the more underdeveloped a country, the smaller the proportion of its income invested in scientific research. That is why, as I pointed out several years ago,⁶ the rate of development of science in underdeveloped countries probably is lower than the growth of their economy. As a

⁶ Dedijer, S., "Scientific Research and Development: A Comparative Study." *Nature*, CLXXXVII (1960), 4736, pp. 458-461.

result, the underdeveloped countries condemn themselves to lag further and further behind in the growth of science and the utilization of its results. This means that they can expect to be beaten on the competitive world market even in the future by countries which invest more in research. A twofold increase in research expenditure every two years for the next decade will barely permit an underdeveloped country to keep up with the growth of investment in research in the developed countries. If he decides, as he should, on such a course, a president or prime minister of an underdeveloped country will have a hard time with his finance and other ministers. He must, however, persist, keeping his eyes on the future and pointing out that many, if not most, the 'get-rich-quick' investments in industry, agriculture, power, mining etc., have not realized the hopes which were placed in them.

Just as he must insist with unremitting obstinacy on expanding the allocations for science and technology, so too he must insist that his country cannot have too many scientists. Underdeveloped countries have so few scientists, engineers and doctors per million population, compared with the developed ones, that however great an expansion they undertake, they will still lag far behind the more advanced countries for a long time to come. Furthermore, as it has been shown, the number of science and technology students per million population is at present about a tenth as large in countries with an income of \$100 per head as it is in those of \$500 or more. Endeavours to correct this balance must constitute one of the central, if not the central, science policy tasks of political leaders.

In the countries with an income of \$300 and less per head, for which such data are obtainable, i.e. about 15, one notes that in all of them without exception, what research does exist in the country is isolated from the universities, where students can specialize in science. As a matter of fact, one could almost define an underdeveloped country as a country in which all research is performed, not in industrial laboratories or in the universities, but in large, almost hermetically sealed, government institutes. The arguments for the relatively small number of science, technology and medical students and for this divorce of research from training in scientific research work have been repeated so often that they have become almost dogmas. Political leaders must demand a careful review

of this situation. There is a certain blindness to the importance of scientific manpower in underdeveloped countries. It therefore seems acceptable to isolate so much of the training capacity of the country, however meagre that capacity may be, from the prospective trainees. The reasons for this neglect are obscure. Perhaps it is because training has come to be thought of as a postgraduate activity into which the universities of underdeveloped countries have not felt it incumbent on themselves to enter, partly because the political and journalistic elites have seldom been postgraduate students themselves. But whatever the cause, manpower plans, even those which devote much attention to engineering, medicine and teaching, do not pay much attention to the output of scientists and even less to the output of scientists who can train more scientists.

The determination of the proper balance in a national research programme in basic and applied physical, social and life sciences represents one of the most difficult research policy problems for the underdeveloped countries. Yet, there is a simple rule which can guide the decision-maker in facing this task.

The need to survey the human, mineral and vegetable resources of the country should constitute the first claim and should determine what kind of research institutes the country should invest in first of all. A country with abundant agricultural resources of a given kind and with the prospect of developing them, would do best to concentrate intense research efforts in all branches of science, life, natural and social, basic and applied, which would increase the knowledge bearing on agriculture. The development of basic research in these circumstances is indispensable from many standpoints; it is necessary for broadening the range of practical possibilities available in the given complex of resources: it is necessary for the maintenance of research standards and research morale, etc.

The survey and development of resources should definitely include the development of human resources. For this reason, a vigorous development of the social sciences must not be neglected. The social sciences in the developed countries, both East and West, play an ever increasing and indispensable role in the formulation of national policies and in the evaluation of their execution. In underdeveloped countries, the social sciences have the special

task of bringing the mirror to the face of the nation to show what it is: an underdeveloped culture, and to illuminate, as much as its present methods permit it, the rough road of the cultural revolution, which is necessary if the country is to develop.⁷

The political leadership of an underdeveloped country, even if it wishes to develop science as vigorously as possible, must confront not only its own ignorance of the problem but also the difficulty of getting informed and disinterested advice. Eagerness to develop science, ignorance, numerous distracting preoccupations all make it easy for cranks and promoters to come forward and to acquire influence over scientific policy.

VII

Certain of the malaises of the scientific life of the underdeveloped countries are well known and we have already referred to them. But there has not yet been sufficient analysis of them. For example it is frequently, and on the whole correctly, asserted that a tradition of scientific research is lacking in underdeveloped countries. We have, however, still to understand what is implied by this observation which is of the greatest importance. It is a matter of attitudes towards discovery, capacities to perceive problems, to sense the relevance of theories to observations, and vice versa. It is in part a frame of mind, which emanates from one person, which is received, perhaps through identification, by another person and which is constantly renewed and revised. The conditions of this transference of a general outlook, the internal arrangements within an institution, the optimal combination of different generations—on such matters we as yet know very little. Yet if scientific policy is to be made effectively it must take into account the necessity of implanting and continuously reproducing the tradition of science, that paradoxical combination of continuity and inno-

⁷ The social sciences can contribute not only inventories of what the country possesses, they can also increase and enrich the national self-consciousness, the mutual awareness of the different sections of the population and thus aid in the transformation of a collection of scarcely integrated separate traditional societies united by a single government into a coherent modern society. This in turn, by unifying the culture of the country, would help to feed the reservoir of talent from which prospective scientists could be drawn.

vation which is at the centre of scientific growth.

How to create something important which is lacking is certainly difficult. It should not stand in the way of clearing the ground of obvious malformations, the presence of which can only impede the growth of science and which affect almost every detail of the formulation and execution of national science policy. Such malformations, some of which will be referred to later for illustrative purposes, affect the work of the individual research worker, of the directors of laboratories and the highest scientific administrators in the country. They are expressed in the national research programme and in the outlook of research workers and in their relationship with each other. Those which I mention are only a few of the many which exist; all are worthy of detailed analysis because, unless they are well understood, their pernicious character will not be appreciated and their elimination will be delayed.

There often exists a belief that the development of a particular branch of science, or of a particular project, will enable the country 'to jump generations', to turn it overnight from an underdeveloped to a developed culture, or to make it militarily vastly superior to its enemies. Although I have encountered only two leaders of underdeveloped countries making such statements openly and repeatedly, I conclude from many interviews with scientific policy officials and from the policies themselves that the belief is fairly widespread.

Another malady of science policy is to concentrate most of the national research effort on one major project and to plan its development far beyond the actual capacities or the need of the country for this particular branch of research or its results.

The tendency to devote resources to research programmes which confer prestige internationally is another vice of contemporary science policy in the countries we are considering, much more so than in the developed countries.

Even countries with the minimal provision for science are bound to work through a number of institutions, agencies, departments, etc., which compete for the meagre funds available from the science budget. Very often these agencies are concerned with particular projects arising out of the real (or imagined) needs of the country. They are often ruled by powerful personalities, who are

imbued with a missionary spirit on behalf of their particular branch of science, and who act as 'scientific empire builders'. Each of them rules his 'empire' with an iron bureaucratic hand, keeping most of his staff in misery and eager to leave the institution and even the country at the first opportunity. Sometimes the aspiring 'scientific imperialists' make pacts with other scientific empire builders not to recruit staff from each other, thus reducing mobility and demoralizing their 'captive scientists'. This feature is accentuated by the civil service-like bureaucratisation of scientific institutions in the underdeveloped countries, which, among other rigidities, prevent scientists from attempting to transfer to another research institution unless they have the permission of their present superiors.

More generally, civil service procedures result in almost unbelievably frequent and changing demands on scientific institutions and individual scientists for 'proper procedure'; there is a distracting insistence on the control of everything and everybody connected with research and all this requires 'reports', 'plans' and 'requests in proper form'. In the more advanced countries there has been sufficient experience with scientists and there are enough scientists in scientific administration to inhibit such bureaucratic *paperaiserie*. In the underdeveloped countries, there has been too little experience of scientific research to permit a realistic image of how scientists really work and of what is compatible with their effectiveness. There is not enough of a culture of the scientific community to stand up against the tradition of the civil service and the distrustfulness of politicians.

Bureaucracy, beliefs in the magical powers of science and empire-building are usually accompanied by an insistence on secrecy. The jealous insistence on secrecy in underdeveloped countries is very often used as a means to protect scientific cranks and rogues who proliferate in countries without scientific tradition.

In the lower ranks of the small and fragmentary scientific community of the underdeveloped countries, there is a pronounced tendency to build 'institutes' as private reserves, from which to attack and repel, as if from medieval castles, particular academic and scientific enemies.

All decision-making in government entails a political element and the higher the level of decision, the more pronounced is this

political element and the more pronounced is the struggle to exercise influence and power. This is true of decision-making in science and science policy in every country. In underdeveloped countries these struggles for power sometimes become so acute that often the basic objectives of decision-making are lost in an atmosphere of political wire-pulling, lobbying and acrimony.

These vices are not, as I have already suggested, confined to the uppermost levels of science policy-making; they intrude into the 'atmosphere' of laboratories, of the whole institutes, of branches of science and of the whole institutional system of science in some countries. They help to accentuate the attenuated creativity of diminution of the scientific workers of these countries.

VIII

There is a small number of first-class scientists in some underdeveloped countries, who, under the extremely difficult conditions existing prior to independence, when scientific research was scarcely encouraged, managed not only to survive scientifically but, through the strength of their character and their devotion to science, also managed to build first-class laboratories and institutes. The hard struggle for scientific existence they had to go through often left an imprint on their personalities, which made it difficult for some of them to adjust themselves to the new generation of scientists. Such personalities, however, as a rule hold very high the standards of fruitful scientific work and they often succeed in transmitting their views and beliefs to their pupils.

Yet, one often encounters other types of scientific personalities who have a more negative influence on scientific productivity. Some of these like 'Diderot's monk' do as little work as possible, always speak well of their superiors, and let the rest of the world, including their fellow scientist monks, go to the devil. There are also 'research politicians' who devote little time to their own research work but much time to laboratory politics, flattering their superiors, jockeying for posts and stipends for travel abroad.

Then there are the irreconcilable malcontents who complain incessantly about the conditions of their laboratories, the condition of science in their country, their colleagues' incompetence but do very little themselves.

Other frequently encountered types of scientists who help to hold science back in the underdeveloped countries are the 'cranks' who have fixed ideas about solving one or more unsolved problems in science by methods which border on lunacy. With powerful political backing these cranks sometimes prosper for a long time, especially if they are, as is not rarely the case, 'rogues'. These are sometimes men of ability but they do not do research; their aim is to establish by hook or by crook 'a reputation' out of all proportion to their real value as scientists.

All these corruptions of the scientific career can prosper, and have prospered, in advanced countries and in highly developed scientific communities. There, however, sooner or later, through the action of an open scientific community, they are more liable to exposure; in any case they very seldom attain any marked influence. In underdeveloped countries, however, such persons can become dominant in research institutions and can do much damage to the more gifted and more devoted individual scientists as well as to the scientific system as a whole.

These are all contributory to the lesser effectiveness of scientific effort in the underdeveloped countries. A wise president or prime minister will see to it that his adviser for scientific matters initiates studies which, although they are difficult, would measure and assess the research attainments of individual scientists, of whole institutes, the extent of utilization of research results in industry, agriculture, medicine, etc., in his own country and compare it with similar indicators for other countries. Such inquiries would make more vivid and convincing the general impressions which are gained by less systematic observations concerning the harmful repercussions of 'the lack of scientific tradition'.

IX

There are three main causes for these obstructions to the effective use of the limited scientific resources of the underdeveloped countries. Each is interconnected with the other and together render difficult an efficient science policy. They are (1) the failure of such scientists as there are to carry and transmit the tradition of science and their consequent failure to constitute a scientific community; (2) the lack of appreciation of and demand for research

by industry, agriculture and other sectors of society; (3) the government, a bureaucratic institution, lacking in experience and tradition in dealing with science is, and must be at the beginning, the only decision-maker on science.

But since the government alone has the funds and, to the extent that they exist, the powers to promote the development of science, it is up to the government and to its president or prime minister to remedy this situation. This can be done if the government, at least in its crucial parts, can change its character, and that being done, the first of two factors are made the major and most important concern of the research policy of the country:

(1) A scientific policy, to be effective, must build a scientific community with its own traditions, closely linked to the international scientific community and the universal standards of science.

(2) To foster the appreciation of and demand for research work and research results by the industry, agriculture and by the other major institutional sub-systems of the society.

The second of these objectives is a very complex problem depending on the economic and all the other national policies. Creating demand for science in industry, instilling in industry the need for inventiveness, the need to 'make better mouse-traps' is a very difficult problem, which nevertheless must become a major objective of national policy. This is in general one of the key problems in most countries with highly and rigidly planned economies—economies in which no substitute has been found for the profit motive and the competitive effect of the internal or foreign market is not operative. What to substitute for the profit motive and competition as the drive for inventiveness in the economic life, which has to be increasingly based on continuous and long-range planning, is a problem which not only the underdeveloped, but the communist countries too, are beginning to face. The study of this problem and finding ways to stimulate the demand for research in agriculture, industry and all other economic sectors must be a special field of concern for those making national scientific policy. This is especially true for underdeveloped countries, where research institutes in applied science are often in fact 'pure' re-

search institutes, simply because their results are never demanded or used by their native agriculture or industry.

To attempt to solve the problem of making a scientific community with a scientific tradition, the political leaders of an underdeveloped country will have to turn to the social sciences for basic information, for particular studies and for empirical understanding on how to proceed.

Underdeveloped countries have scientists, but have no scientific community, if we define the latter, in the light of what exists in the developed countries, as an organized group with a developed system of beliefs, with a developed system of institutions for internal communication, as well as a system of communication for dealing with other social groups, and which is bound by certain traditional norms of behaviour for furthering their individual and collective work in science.

In an advanced country, the scientific community is large enough to permit differentiation with sufficient members in each special field to permit complex interaction with each other, and sufficiently different from each other to be able to stimulate each other; it must be organized into a system of training, research, publicity, standard-protecting institutions, which control admission by rigorous scrutiny of qualifications, and which represent and protect the community in its relations with other sectors of the society. It has its own culture, i.e. beliefs, values and vocabulary, its own heroes and models of conduct; it is aware of its history and its continuity with the past without being rigidly attached to that past. It has its own system of communicating and assessing the results of research and analysis and its own patterns of promoting the proficient and holding back those who do not meet its requirements. It has its own circles of face to face interaction and inter-individual communication. It is aware of itself at least in a vague way as something different from other sectors of the society, and it is recognized and acknowledged as a distinctive group by those other sectors of the society. It is linked with other scientific communities across political boundaries by personal contact, by mutual appreciation and by public communication and formal association as well as by a sense of fundamental affinity. It is aware of its identity within the national and world societies and has pronounced beliefs in the legitimacy of its role and cal-

ling. We can see how far the underdeveloped countries are from having a scientific community in this sense. Still that must be the objective of their policy.

In the underdeveloped countries scientists are relatively few in number, and they are often, as far as any particular field of research is concerned, dispersed over long distances. They suffer from isolation from each other and thus they do not have the benefits of the stimulation of the presence of persons working in closely related fields. They are in danger, a danger to which they too often succumb, of losing contacts with their colleagues in the international scientific community. They feel peripheral and out of touch with the important developments in science unless they can visit and be visited by important scientists from the more developed countries; they feel inferior and neglected because their own journals and organs of publication, where they exist at all, are seldom read by foreign scientists, seldom quoted in the literature and are indeed often neglected by their own colleagues at home. They have little contact with their colleagues in neighbouring underdeveloped countries.

They are in brief not fully-fledged members of the scientific community and their work suffers accordingly. Neither its scientific nor its practical value is what it could be, given the talent and training of many of the persons following scientific careers in underdeveloped countries. And the scientific community in the country being frail and anaemic, its relationships with the political order of its own country is poor too. Even were the political leaders willing to pay attention to it, its advice would be made unrealistic by the isolation of its advisers from the pulsations of the living scientific community. The strengthening of the internal structure of the scientific community of an underdeveloped country would improve the quality of its work, enhance its selfconfidence and increase the weight which it carries with the other sectors of its society.

This leads us back to the point made above. The fruitful pursuit of scientific truth and its application, once discovered, is not just a matter of talented individuals, well trained in foreign universities and supplied with the equipment they desire. These are very important, but the cultivation of science is a collective understanding and success in it depends on an appropriate social struc-

ture. This social structure is the scientific community and its specialized institutions. The underdeveloped countries can dispense with it no more than the developed countries can. The advantage of the latter is that they have inherited it and can develop it as the occasion demands, with the effort which is inherent in traditions which are already well established. The disadvantage of the underdeveloped countries is that they must develop it *ab ovo*. But develop it they must or they will have no scientific development and no economic and social development either.⁸ Until science becomes an autonomously growing institution in the new states, all devolves on policy.

⁸ The identification of the standards of judgment and conduct of scientists as a community is a very difficult task. Such norms are transmitted, mostly orally, through example. They are not easily articulated. Very rarely could one find examples of them described in the biographies or autobiographies of scientists. Nonetheless, the social sciences are now beginning, however rudimentarily, to analyse them. Progress is being made in the perception and articulation of the nature and content of these standards, and the community which is maintained by them and by which they are maintained. Even now social scientists are beginning to think in the social science idiom. Thus, for example, we find in *Science*, CXXXIX (1963), 3561, an editorial on 'The Roots of Scientific Integrity', written practically in the language of sociology, where among other things it is said: 'Part of the strength of science is that it has tended to attract individuals who love knowledge and the creation of it. Just as important to the integrity of science have been the unwritten rules of the game. These provide recognition and approbation for work which is imaginative and accurate, and apathy or criticism for the trivial and inaccurate. . . . Thus, it is the communication process which is at the core of the vitality and integrity of science. . . . The system of rewards and punishments tends to make honest, vigorous, conscientious, hardworking scholars out of people who have human tendencies of slothfulness and no more rectitude than the law requires'. The social sciences are, however, only in their beginnings in this subject. The natural science policy-makers must draw from them what help they can in getting on with the task of supporting, fostering and encouraging the creation and development of their own scientific communities.

REPORT OF THE SCIENTIFIC COMMISSION OF PAKISTAN¹

GOVERNMENT OF PAKISTAN, MINISTRY OF INDUSTRIES

THE Scientific Commission appointed by the Government of Pakistan began its work in the latter part of 1959. Its terms of reference were to consider the best means (1) of organizing and promoting research; (2) of providing adequate facilities for research; (3) of insuring the utilization of the results of research in a way which would contribute to the development of the country; and (4) of making scientific careers sufficiently attractive so that they might compete favourably with other services of equal national importance. The Commission formed its assessment of the situation of science in Pakistan through an elaborate questionnaire, and by visits to laboratories and universities, where it conducted extensive interviews and received reports from individuals and organizations.

While deeply appreciative of Islam's great tradition of science, it did not regard this as anywhere near an adequate basis for the growth of science in Pakistan; it stressed that 'unless the governments of the underdeveloped countries take special care of those who have a creative talent and who devote themselves to scientific researches and acquisition of knowledge and learning, the wheel of progress will remain static'.

Scientific life in Pakistan began under a great handicap. Of the twenty universities of undivided India, the newly established state of Pakistan acquired only the universities of the Punjab and Dacca and the three-month-old University of Sind. Nearly all the scientific and technological institutions were outside the territories of Pakistan. The few educational and scientific institutions were overcrowded with students. Their staffs were depleted. Standards were inevitably and profoundly affected. Research was crowded out by teaching. New staff members had practically no research

¹ Government of Pakistan Press, Karachi, 1960, p. 102.

training; men with research experience were distracted by administration.

Progress has been made since Independence. Three new universities have come into existence at Karachi, Peshawar and Rajshahi. There are now four Research Councils: the Council of Scientific and Industrial Research; the Food and Agriculture Council; the Medical Research Council; and the Atomic Energy Council. The CSIR has laboratories in Karachi, Lahore, Peshawar and Dacca. They form the largest single concentration of scientific effort in the country. The Food and Agriculture Council and the Medical Research Council do not carry on research of their own, but support research schemes proposed by individual workers and government departments. The Atomic Energy Council has a laboratory at Karachi, has installed an atomic reactor, and it has plans for the establishment of research centres for the use of radio isotopes and radiation sources in agriculture, medicine and industry. The Central Jute Committee and the Central Cotton Committee have been set up to promote research on jute and cotton; each has a research institute and the latter has a model farm. The Meteorological Department of the government has laboratories and observatories in different parts of the country and also conducts an Institute of Geophysics at Quetta. The Forest Department has a Research Institute and a Forest Research Laboratory. The Geological Survey of Pakistan is establishing its laboratories at Quetta; there is a Central Testing Laboratory at Karachi and the Health Department has a Bureau of Laboratories at Karachi. There are a number of special research establishments set up by the provincial and central governments.

All this notwithstanding, the Commission concludes that 'sufficient importance has not been given to the promotion of scientific effort and . . . scientific researches have contributed very little, if at all, to the general economic development of the country.' There is no 'well-thought-out rational scientific policy.'

Funds are entirely inadequate. 'In no sector of development activity has such meagre allocation been made for such an important cause as higher education. . . . The central government should assume greater financial responsibility for higher education in the universities, with particular emphasis on science. This

can be done through the Universities Grants Committee as well as through a directive to the various Research Councils to pursue some of their research programmes in the universities and to make grants to them for equipment, stores and research staff employed. In this connection we would like to state that the central grants made to the universities should be planned on a quinquennial basis and the uncertainty of annual allotments removed to ensure regular flow of funds so necessary for proper programming and continuity of research projects.'

University staff recruitment must concern itself as much with research as with the teaching obligations of the institution. Every promising scientist willing to join a university staff must be absorbed into the science departments concerned and facilities provided for him. A reserve fund for such appointments must be created. The number of really talented scientists is bound to be small enough to make the financial burden of these appointments quite tolerable. The Research Councils should help finance the absorption of such men in specific research teams or on projects which will be undertaken by them at the universities.

Laboratories, libraries and workshops are inadequate, administrative procedures are tortuous, funds are meagre. One result is that 'promising young men, having done excellent research work abroad, ceased to be active even when facilities existed for them to continue their good work'. There is a widespread sense of frustration among the younger men, who feel blocked by seniority and bureaucracy.

The Commission does not believe that the chief emphasis of Pakistani science should be on applied research. Generous provision should be made for pure or basic research which should be the proper sphere of the universities. Since research must grow around individual leaders of research, and cannot exist without them, if a university teacher has an interest in applied research, 'there is no reason why such a scheme should not be pursued in that university under a grant from the appropriate Research Council'.

'In view of our limited resources, it would perhaps be advisable for each university to concentrate and specialize in certain subjects for purposes of research and to establish a high reputation for contribution to the knowledge in those subjects. This alloca-

tion of subjects can easily be arranged through the good office of the Inter-Universities Board.'

The situation within the universities with respect to technical equipment, books and journals is 'appalling'. Sometimes good scientific workers are found in a place, such as Dacca, without adequate equipment for research. The Commission noted that in no university, without exception, had important scientific journals been imported for scientific libraries since 1954-55. The workshops attached to university laboratories are poor in equipment and lack trained technicians. The acquisition of new equipment is hampered by bureaucratic methods of procurement.

The Provincial Governments of Pakistan are responsible for education. They are, however, unaware of their responsibility for science. They regard scientific research as a 'luxury' and though 'there was much talk of development and implementation of projects, the emphasis was still on administration. . . . Very little investment has so far been made by the Provincial Governments in the establishment of new research institutions or the expansion of existing ones'.

In the scientific departments of the Central Government, which are attached to parent Ministries, recruitment follows the routine civil service procedure. Furthermore, 'although permanent employees in these departments enjoy the benefits of pension and other amenities, quite a number of posts are purely temporary, with the result that young scientists look to other careers and gravitate toward administrative services'.

The scientific departments of the Central Government, such as the Meteorological Department, the Department of Geological Survey, the Bureau of Laboratories and the Central Testing Laboratory, are preoccupied with routine duties, so that there is little time for research and the most important problems remain untouched. The Commission notes that the Meteorological Department has well-equipped laboratories and observatories and that it even does quite good work, but it says that 'this has been possible in spite of the system under which the Department has to work'. The Geological Survey of Pakistan employs a small number of geologists at meagre salaries and has no laboratories properly equipped for testing analysis and ore-dressing. If they do develop a scheme of research and obtain approval for staff, it

takes the Federal Public Service Commission many months to recruit trained men, who, in the meantime, usually get relatively lucrative offers from oil companies and industry. All this is very damaging, in view of the short period which the climate permits for research in these fields.

A considerable delegation of responsibility, quite far down in the hierarchy, is necessary in scientific research organizations. Departmental laboratories in scientific institutions which have valuable equipment and apparatus should have authority to make local purchases and to import urgent requirements out of emergency foreign exchange funds to be placed at their disposal, in order to avoid injurious delays.

In agriculture the Commission is disappointed by the small sum of money spent on research in agriculture, a field which engages 85 per cent of the people, directly or indirectly, and which produces 60 per cent of the national income.

The Medical Research Council established in 1953 has no laboratories or institutes of its own; it makes grants for research schemes submitted to it by individual research workers in medical institutions. So far the Council has offered only half-hearted and unplanned assistance to research workers. The Commission thinks that, given the shortage of qualified and experienced men in the medical profession in Pakistan, it is necessary for the Council to establish institutes and laboratories exclusively devoted to research. Research should, of course, be promoted in medical colleges around men who are capable of and anxious to do research. But just as universities cannot undertake all kinds of scientific research, the medical colleges cannot be expected to conduct researches in all fields of medicine and public health. Research in medical colleges and individual centres should only supplement, rather than be a substitute for, the work done in specially organized research institutes and laboratories. There should, accordingly, be set up, under the Medical Research Council, an Institute of Tropical Diseases, an Institute of Public Health and Hygiene and an Institute of Medical Research.

Of the staff required by the CSIR Plan to staff its laboratories, 168 would be research scientists and the remaining 443 would be technicians and laboratory assistants. Thus far the CSIR has been able to recruit only 82 research scientists. Out of these no

less than 53 are working in Karachi, leaving only 29 for the three regional laboratories. The CSIR, therefore, should take particular pains to avoid duplication or else to undertake a massive training programme of young scientists to be sent abroad under technical assistance offered by international agencies. The Commission notes, with appreciation, that the Government has increased its contribution to the budget of CSIR from 500,000 rupees in 1953-54 to 12,000,000 rupees in 1958-59.

The Government of Pakistan established an Atomic Energy Council in 1956, but was unable to start any work of importance. Its training programme was of too short a duration to be of much use. An interim laboratory was established in Karachi, but could not do any useful work because of the inadequacy of trained staff and delays in the selection and installation of an atomic reactor. Since that time, some progress has been made, under the Government of Marshal Ayub Khan. There is a plan to establish two nuclear training centres, one in Dacca and one in Lahore for training in the use of radio-isotopes and radiation sources. The Atomic Energy Commission also intends to establish two agricultural research centres for the use of radio-isotopes and radiation sources in agricultural problems. Plans have also been finalised for a National Institute of Nuclear Science and Technology, to be centred around a reactor which is being provided by the Government of the United States. Able young men are now being recruited and sent out for intensive training in the maintenance and operation of reactors. Long courses in specialized subjects, such as reactor design, separation and preparation of isotopes, electronics and instrumentation are under way. The Scientific Commission feels that if this training programme is continued, there will be a core of specialists who can achieve successful results within a short time.

Industrialists have shown little appreciation of the role which can be played by scientific research in improving processes of production and reducing costs and of finding substitutes within the country for imported raw materials. The CSIR must 'take steps to project itself more effectively into the industrial background to demonstrate what it can do to support and develop industrial activity, whilst recognizing that industry will finance the development of such processes as are commercially exploitable.'

The Commission suggests that a levy on industrial production be imposed; that industrialists be invited by the Government to join, using the money so collected for research and other scientific efforts. The Government might add funds of its own to this, but the important point is that industry should conduct research on behalf of industry, making use of British experience. The Commission also suggests that some of the more enterprising firms in Pakistan should, as others have already done, become members of research associations in industrially advanced countries and benefit from scientific investigations done there. The Government should facilitate this liaison with research associations abroad by permitting remittances toward membership fees and subscriptions.

Recommendations

(a) Types of Research

The Commission believes that Pakistan must achieve self-sufficiency in food production. Only scientific research will show whether this can be done. The Commission recommends research on the extraction of food from plants and parts of plants which are at present wasted. There should be research on the growth of nitrogen-fixing leguminous plants. Research on soil conservation, erosion, breeding of animals, ichthyology and pisciculture, marine biology and the growing of plants in water can all help the food problem. Likewise, there should be research on cash crops like jute, cotton, tea, tobacco and sugar cane, as well as on dairying, etc.

Research on solar and atomic energy are called for because Pakistan's reserves in coal, peat, natural gas and oil are very limited; studies of these phenomena should therefore receive high priority.

In regard to the problems of industry, there is already much industrial research which may be easily borrowed from industrialized countries, provided adequate data and technical know-how are available. Where 'borrowed' research is used, adaptation to conditions peculiar to Pakistan is usually necessary. Great problems arise in the substitution of indigenous raw materials for import or in the up-grading and refining of a local commodity by a new process.

A wide range of public health problems need investigation.

The Commission concludes its chapter on research in relation to national development by stressing the importance of statistics for the guidance of national policies and adds that one of the universities should become a centre for research in sampling.

(b) *Channels of Responsibility*

The Commission recommends that all research outside the universities and government departments should be conducted under the jurisdiction of five Research Councils; the Agricultural Research Council; the Medical Research Council; the Council of Scientific and Industrial Research; the Atomic Energy Council; and the Council for Works and Irrigation Research. It also suggests that there should be a separate organization for defence research. There should also be a National Science Council, which, among other things, could give advice to the President on the regrouping of the various research activities of the country under their respective research councils. The Commission rejected the idea of having a separate Ministry of Science with the Research Councils under it. A ministry would have to work within the limits of conventional methods of administration involving a hierarchy of officers, 'sitting in judgement over the work of creative scientists.'

The second alternative was to set up an autonomous body, the Pakistan Science Foundation, which would have the Research Councils as its constituent units which would function independently, after receiving their funds from the Foundation. This Foundation would determine priorities and distribute funds among the Councils, and establish and run a common corps of scientists and technicians; all the Councils should maintain liaison with international organizations. The Foundation would be responsible directly to the President of Pakistan, independent of any Ministry. The Commission believes that a Pakistan Science Foundation is the right long-term arrangement. In the intermediate course proposed by the Commission, the five Research Councils would be completely autonomous under separate statutory charters of their own, attached to the Ministries of the Central Government; the National Science Council, a central organization, would have purely advisory and coordinating functions.

The National Science Council would prepare plans for scienti-

fic investigations, indicating the research problems in different fields within the resources approved in the national five-year plans. It would scrutinize the programmes and fields of research prepared by the Research Councils, making budgetary representation to the Ministries concerned. It would assess and evaluate the results of research and recommend, where necessary, measures for the utilization of these results; it would advise the Central Government on all matters connected with the development of scientific activities, including any particular issue referred to it by the Government, and finally, it would provide scientific liaison with other countries and scientific organizations, where these could not be provided by the Research Councils themselves.

The Research Councils have the following functions: to set up research institutes and laboratories in different parts of the country; to undertake investigations and research on problems of national importance, falling within the plans approved by the National Science Council; to place its programmes and research projects before the National Science Council for approval through the Ministry concerned; to purchase scientific stores including books and journals; to grant fellowships and scholarships for the promotion of research; to accept endowments, fees, gifts, etc.; to ensure patents and to arrange for the utilization of research developed in the institutes and laboratories; to establish libraries, museums and herbaria in the scientific fields within the jurisdiction of each Research Council; to issue scientific publications and disseminate technical and general information on scientific matters; and finally, to establish scientific liaison with such scientific organizations as are connected with the scientific activities of each Research Council. Initiative should rest with Research Councils in the preparation of research schemes for a period of two or three years. The Ministries should not comment on the technical aspects of the schemes, but should refer them to the National Science Council for scrutiny and advice. It is the task of the Ministries to sanction the allocation of funds for schemes submitted by the Research Councils. The Ministry should not interfere in the day-to-day affairs of the Councils and the institutes and laboratories established by them for scientific work.

A good deal of the nation's scientific effort should be directed toward defence science but the constricting effects of security re-

gulations on research should be guarded against.

The Commission thinks that defence science and civilian science should be kept administratively separate and that defence science should come under the Ministry of Defence. It recommends that steps be taken by the Ministry to establish an integrated defence science organization, parallel to the five Research Councils. There should also be a Scientific Adviser to the Ministry of Defence.

(c) *Status of the Scientist*

'The Government cannot escape the responsibility of nourishing creative talent in the much neglected fields of science and technology, and . . . this can only be done by giving to scientific professions a status comparable with that of other services in respect of privileges, salary, structure and other conditions and prospects of service'. Pakistani scientists who have been trained abroad often seek refuge from the present frustrations in the situation of scientific research in Pakistan by seeking employment abroad. (The Commission appends an incomplete list of Pakistani scientists who are working abroad). 'It is imperative for us to create conditions within the country which would stop this drain and flight of talent.' There is also a tendency for some of the best science graduates to join the civil service and other more remunerative professions, while those whose idealism and devotion to science did not let them succumb to the lure of these services have suffered heavily in life'.

The Commission recommends a creation of a separate cadre of the Scientific Service of Pakistan. At present, when there is no such cadre, scientists, although paid at the same scale as civil servants, have poorer chances of promotion and patronage. The Government must create greater scope of opportunity in a scientific career in the Government if it hopes to improve the position of science and its fruitfulness for the country.

In the semi-autonomous institutions in Pakistan, most of the scientists are recruited on a temporary basis and the Commission disapproves of this. The university situation is worse, because there are very few higher posts and deserving young men find their prospects blocked; they feel frustrated, especially when the men in senior positions have no concern with scientific work and merely occupy their positions because of seniority.

Private industry should be a large employer of Pakistani scientists and technologists, but even the most enterprising among the industrialists of Pakistan do not recognize the value of research scientists or technologists compared with salesmen.

The Commission is very aware, too, of the fact that in Pakistan the status of a person is determined not only by pay and the nature of the work itself but by the power and prestige of the office. 'This is reflected in the Warrant of Precedence and official invitations, issued on social and public occasions. The scientists have hardly any place in the official build-up and they are in fact ignored as a class. The public take the cue from the Government and the general attitude towards the scientists and intellectuals of a community is one of indifference, with the result that few of the young entrants into life wish to build up their future in science.'

The Commission also is acutely aware of the importance of technicians of all kinds. In Pakistan, the technicians in laboratories of scientific institutions are few in number and are not capable of undertaking many of the responsible activities which are expected of laboratory technicians in advanced countries, hence, the scientific staff is continually burdened with tasks which ought to be undertaken by technicians. One of the greatest contributions to the advancement of science in Pakistan could be achieved at a relatively low cost by training a large number of these laboratory or engineering technicians.

(d) *Scientific Staff Requirements*

There should be about 300 'scientists' in the cadre strength of the Research Councils now and the number should be doubled in the next five years. The number of technicians should be twice as high; the large numbers of peons and office staff of scientific institutions should be reduced. At present the non-scientific staff is in a ratio of ten to one to the scientific staff. The Commission believes that this should be reduced to a ratio of four to one.

As autonomous bodies, the Research Councils should have their own selection boards for the recruitment of staff. The governing bodies should be the final authority in matters of discipline, except for the removal or dismissal of scientists in grades one to six, which should be submitted to the Ministry for final decision.

Seniority alone should not be the basis for promotion, but rather

productivity and quality of work. The Commission says that in exceptional cases it should be possible to give an even higher salary to an outstanding scientist working in the laboratory than that which is given to the director of the laboratory. Administrative posts in the Councils should not carry higher salaries than those of active scientists of comparable status.

In order to enhance the status of scientists, the Warrant of Precedence should be recast and scientists on the Research Council should be given official recognition of status, equivalent to that given to their counterparts in the Superior Services. Scientists on the Research Councils should be given free residential accommodation or an adequate allowance. They should also be encouraged to go on study leave, at the expense of the Council, every four years and be allowed to take part in international conferences and seminars. They should also receive pensions and benefit funds.

(e) *Scientific Societies and Associations*

The Government should also do something to support scientific societies and associations. The National Science Council should help in the organization of scientific societies and associations on a national basis and help them in their work. The mushroom growth of societies formed without adequate funds and proper programmes should be discouraged by withholding recognition and assistance.

(f) *Applied Sciences*

Work of immediate or long-range bearing on the development of the natural resources of the country should be the main concern of the Research Councils. A substantial proportion of the funds appropriated for science should be earmarked for fundamental research, and 'for ensuring the country's contributions to the international pool of knowledge, and for satisfying the particular urge or capacity that exists in Pakistan for research in the fundamental fields'.

The Commission is very deeply concerned with the application in industry of the results of scientific research. It cites autonomous organizations like Research and Development Boards with adequate funds in other countries, and it lays out a few broad principles for such operations by the CSIR. Certain industrial ap-

plications of the research of the Councils require pilot plants and experts. Such projects should be handled in association with the Pakistan Industrial Development Corporation. The Commission recommends that the Government should place foreign exchange at the disposal of the CSIR for allocation to industrialists who may require equipment for commercial exploitation of the processes developed by the CSIR. Where the industrialists are unresponsive, separate funds may be allocated to the CSIR for setting up semi-commercial plants. The CSIR should organize an 'Extension Service' whose function it is to publish and disseminate among industrialists the latest information on industrial processes, products and patents.

(g) *Training Schemes*

Because of the large deficiency in the supply of qualified scientists and technologists in Pakistan, the Commission recommends that one hundred talented graduates of science, engineering and medicine should be sent abroad every year during the next five years to foreign universities to obtain honours degrees to be followed by post-graduate studies leading to a research degree equivalent to Ph.D. The total period of training for each candidate would be three to four years. A broad field of research should be determined to suit the requirements of the Research Councils, so that on return each student may be employed on definite research projects, for which basic equipment should be procured in advance of the arrival of the trainees. 'The present tendency of doing research on problems relatively unimportant (except in theoretical subjects) to Pakistan, should be discouraged.' Those persons who have an M.Sc. from a Pakistan university should be employed in the laboratories of the Research Councils for about two years, and their aptitudes should be carefully studied. The best of them should be sent abroad for specialized training or research. There should be two big centres, one in East and one in West Pakistan, to train young boys as laboratory technicians. It should be possible to get experienced instructors from abroad for this purpose. Until these centres are well established a number of young men, with a background of polytechnic training, should be sent every year for two-or-three-year courses to foreign countries.

(h) *Supply of Equipment and Documentation*

The Commission thinks that one of the reasons for the sterility of scientific work in Pakistan is the poor equipment in the various laboratories. At present Pakistani industries cannot meet requirements for instruments, apparatus, tools, chemicals, etc., so that they have to be imported. Numerous complaints have been received about the inadequacy of foreign exchange allocations to laboratories and the very complicated procedures for getting equipment. Import duty on all laboratory items should be waived in the interests of the promotion of scientific work. Also, the manufacture of instruments and scientific apparatus should be promoted within Pakistan.

The Commission emphasized the need for the improvement of scientific libraries. It regards libraries as important as equipment. It recommends that the Scientific Departments and Research Councils and universities should be granted general import licences. There should also be arrangements for an inter-library loan of books and journals, procurement and preparation of microfilms, photocopies of published papers, preparation of bibliographies, translations into English from important scientific papers in non-English languages, as well as provision of lists of scientists abroad working on problems of interest to Pakistan.

Most of the laboratories which the Commission visited had no workshops worthy of the name. Costly equipment in need of repair was often left unused, because the import of spare parts was involved. Every research laboratory should have first-class workshop and the necessary tools, spares and stores. There should be mobile operating units, with a staff of experienced technicians, like the workshops of the Army at Rawalpindi, and the Commission recommends that the Research Councils should establish liaison with the Army workshops wherever possible.

Finance

At present Pakistan spends about Rs 20,000,000 a year on science, all of which comes from the Government. This sum should be increased to Rs 150,000,000 a year, of which Rs 60,000,000 should go to the Research Councils and the rest to scientific research in universities.

INDIAN SCIENTIFIC POLICY (I)

REPORTS AND DOCUMENTS

NOTE: The independent discussion of the problems of scientific policy outside government circles is a new development in India. *Minerva* will continue to publish in Reports and Documents official documents and declarations emerging from the Government of India but it will also henceforth seek to bring before its readers some of the expressions of non-governmental views. An article by the Industrial Correspondent of the *Economic Times* (Bombay)¹ is reproduced below and in Volume II, Number 4, we will publish a Memorandum of the Institute of Political and Social Studies (Calcutta) submitted to the Review Committee of the Council of Scientific and Industrial Research on National Research Laboratories.

DILIP MUKERJEE

I

Indian Science: Policy, Organization and Application

NOTWITHSTANDING the basic limitation of an apathetic and sometimes overtly hostile environment, there is a great deal that can be done to improve Indian scientific endeavour. . . .

The first factor to recognize is the hot-house growth of science in independent India, the result not of 'felt' needs of the likely beneficiaries, but of government decisions. To be more specific, it was not even the collective decision of the government as a whole, but of a few leading individuals, notably Prime Minister Nehru.

The point in recalling Mr Nehru's role is not to create an occasion to laud the Prime Minister's part in carrying India into a new epoch—an indispensable ritual at all scientific gatherings.

¹ This article was first published as two consecutive articles in *The Economic Times*, 19 and 20 November, 1963. It is reprinted here with a few deletions and some very slight editorial emendations.

The purpose is to underline the extreme narrowness of the base on which scientific endeavour has rested, even at the topmost level in New Delhi. Once this is realized, there is no difficulty in understanding why such a large part of the nation's genuine scientific energy and drive must perforce be devoted to the struggle for bare survival. . . .

Scientific endeavour not being valued for its intrinsic worth, the scientist must bedeck himself in plumes that please. He often finds it necessary to canvass his ideas in terms totally alien to such tawdry and degrading appeals as regional sentiment.

A distinguished scientist writing soon after the Chinese invasion of last October gave the call for setting up regional research committees on the ostensible plea of decentralization. What he really wanted perhaps was a decentralization of patronage so that he, located at a distant outpost of the scientific empire, might get a little more support for his schemes than would otherwise be the case.

Before judging these scientific gyrations too harshly, it is necessary to look into the factors that drive men of good sense and (as one should emphasize) steeped in liberal values, into such venality. The most important of these is the bureaucratization of science, inevitable and inescapable in a situation where government is not merely the sole source of research funds but also the only agency to which scientists are accountable for results. The latter is the really crippling disability.

Even in the U.S.A., Canada, and the U.K. 60 per cent or more of research funds come from government, but a research endeavour can look for moral support from either a well-developed and interdependent scientific community or from the beneficiaries of research results.

We have neither a scientific community and there are hardly any beneficiaries since little use is made of research results. As Stevan Dedijer, said in Calcutta earlier this year, even 'applied' research becomes pure research in developing countries because there is no application.

Leaders of Indian science realize that bureaucratization is the death of science, but they have really no solutions to offer other than minor procedural changes. Prof. P. C. Mahalanobis in his 1958 address to the National Institute of Sciences cited in this

context what appears to be a false model—the USSR Academy of Sciences.

The Academy, he said, maintained in 1957 over 100 scientific institutes and had a total staff of 50,000 of whom 12,000 were professional scientists and 4,000 professors. He proceeded to enlarge on the basis of this example 'the need for a functional scientific institution which would be outside the government and which would take up, by agreement with the government, such scientific work . . . as can be done conveniently by a non-official agency'.

Whole-time scientists employed by this agency would, he said, be 'independent' of government and would be able to take an unbiased view of government policies and activities in scientific fields. . . .

Prof. Mahalanobis is needlessly glorifying the independence of the Soviet Academy. . . .

As is well known, Soviet advance in agricultural science and genetics was held back by political interference with research during Stalin's regime. As Stevan Dedijer says, agricultural scientists—even when possessing judgement—did not dare to use it. . . .

The Mahalanobis idea of setting up a separate functional agency to administer non-official science on the lines of the Soviet Academy does not promise real autonomy to scientists but only the continuance of official control in a different guise. It is difficult, therefore, to enthuse over the proposal to give the National Institute of Sciences a statutory status as an agency for distributing government grants for research.

The experience of autonomy in public enterprise where freedom from day-to-day interference has been similarly guaranteed by statute does not inspire confidence in this purely legal and formal device. . . .

As we now know, real autonomy must remain limited, whatever the literal meaning of the laws, to what public opinion enforces. With a complaisant bureaucracy at their command and an apathetic public opinion to cock a snook at, it is the politician who remains the supreme and unquestioned monarch of all he surveys.

Hence nepotism and what Dedijer describes as research politics—scientists devoting most of their time not to research but to jockeying for posts, stipends abroad, or currying favour with those

who can help them. Anyone familiar with Indian science today can readily recall for himself many examples to fit Dedijer's description, including an ingenious metallurgical innovation named after the then Director-General of Scientific Research.

These ailments of Indian science cannot be cured by any reviewing committee no matter how many eminent foreign scientists are invited to serve on it. The canker afflicting the Indian society infects science: *ipso facto*, no lasting cures are possible until one gets at the roots of the infection.

Many scientists are arguing that an independent scientific community may provide an antidote, however limited, to science being reduced to a plaything of politics. But their ideas of how this is to be brought about are still ill-defined if not positively mystical. *Science and Culture*, a journal which was once the standard-bearer of Indian science, urges government to foster the development of the scientific community by democratizing the scientific life of the country. This, it is stated, will help to create all those criteria which make a scientific community of individual scientific workers.

But does this not amount to asking the devil to recite the scriptures? If government could be relied upon to democratize the scientific life and shed its own powers, there would be no problem left at all. No, the solution is unlikely to be found so simply. . . . History teaches the hard lesson that democracy is never conferred but has to be wrested.

In other words, the initiative in this matter must come from the scientists themselves, who will no doubt have to emerge from their sanctuaries (there are no ivory towers any more in our fiercely competitive scientific life) to enlist the support of public opinion. Apathy can be dispelled and public interest awakened if scientists really try to do so.

Research on research, conducted under highly respectable auspices, is currently trying to find out what is the age at which scientists are most creative. Without attempting to anticipate the results, one can safely say that the initiative for building a scientific community will have to come from the disestablished young. The established have no interest in the matter and the older have-nots are unlikely to have either the gumption or energy. . . .

II

So much for the mechanism of reorganizing science, but what about defining the objectives reorganized science should pursue? Professor P. M. S. Blackett, now serving on the C.S.I.R.² Reviewing Committee, outlines a three-fold approach in a recent article in *New Scientist*. Developing nations are advised to investigate known and available technology which will meet the majority of their most urgent needs. The vital task is the formulation of a sensible 'shopping list', the decision as to what to buy in the world's well-stocked supermarket of production goods and processes.

He concedes, of course, that the special conditions of a country—the peculiar properties of the local fuels, raw materials, textiles and food stuffs—may warrant independent research on the spot. The qualifications he adds suggest that this may not require a major effort at innovation but only the adaptation to local circumstances of what has been done elsewhere already. Finally, he suggests leaving out of account for purposes of present national planning the new technology that may just be round the corner.

One should not lightly disagree with Professor Blackett not only because of his eminence as a scientist but also his proved bonafides, *vis-à-vis* the developing world. Yet is he not being a shade too insistent on confining technological and scientific endeavour to mere imitation of what already exists in the advanced nations?

There are important differences in the situations of the two sets of nations. The direction of effort in developed countries is towards replacing labour with capital whereas we should be trying to maximize the efficiency of the relatively less capital-intensive techniques. Very often, the scale of production feasible in India may not require the use of continuous, automated processes but must we, therefore, rely on the batch production methods which the West left behind 30 or 50 years ago? The less continuous production, the greater the need for human supervision and skills, which is perhaps scarcer than capital.

The developing nations will not be producing merely for themselves but also for export—no longer a matter of choice but of necessity in view of the growing payments deficits. If nations like

² Council of Scientific and Industrial Research.

India are to be enabled to compete on the world market in manufactured goods they cannot make do with yesterday's technology. The cotton textile industry in India provides a case in point. It cannot afford, as the bitter experience of the past three years has convincingly shown, to fall behind in the technological race extending all the way from automatization of looms to developing synthetic fibres.

To us in India, it seems fairly clear that we have to adopt a dual standard in technology. At one and the same time, we must take to jet planes, and refurbish the ancient bullock cart with rubber tyres to smooth its passages and with steel axles designed to distribute its load more evenly.

We may still have to rely on importing technology wholesale in the shape of civil aircraft bought from the U.S. factories which supply most of Europe as well. But this is only an extreme example which obscures the real issue.

As Professor Blackett undoubtedly knows, European interest in smelting iron with non-coking coal has been on the wane. Little has been heard recently from the international research centre near Liège where this line of research was being pursued because Europe can afford to rely on other techniques for reducing or eliminating the coke used in conventional technology. The preferred alternatives are electric smelting or hydrocarbon injections in the blast furnace, the one adding enormously to capital cost in terms of tied generating capacity and the other to import bills of nations with inadequate resources of petroleum.

Curiously, two-fifths of the world's iron-ore reserves lie in developing countries but they have only 9 per cent of the world's coal, mostly non-coking. Hence, the need for an independent effort to develop a new technology of smelting and coking in a somewhat wider sense than Professor Blackett may have had in mind when he placed the emphasis on adaptation. . . .

Following on the Blackett formula, one might in conclusion take note of the similar controversy about basic *versus* applied research. Being the more directly productive of benefits, it is right to put the emphasis on the latter in our shortage-ridden circumstances.

Yet, . . . it is pertinent to point out that applied work may in some instances be impossible without a 'basic' understanding of

the problems to be solved. Secondly, there is the human factor to reckon with—there are scientific minds which do not respond to applied problems and may yet do very well in basic research. . . .

Understandably, basic research will get only a residual share out of the research kitty. We cannot afford the personnel or the equipment for major work, yet it is only sensible to create what facilities we can for lone wolves from whom worthy successors to Jagadish Bose, C. V. Raman or Satyen Bose may yet emerge.

III

A country gets the kind of scientific research it deserves. This is the short answer to the questions now being asked about the returns obtained by the country on the Rs 450,000,000 it is spending annually on scientific research and development.

The high-level committee which started . . . to review the work done by the Council of Scientific and Industrial Research (CSIR) . . . cannot . . . alter the basic reality that research cannot thrive where there is no sustained demand for its results.

Both government and industry are equally guilty. Their interest in research and development has been largely formal. There are very few instances where either has taken the initiative to pose the problems to be solved. Nor have they shown any particular alacrity in making use of the work done by scientific institutions on their own.

There is, of course, the problem of transferring results obtained in a laboratory to commercial-scale processes. But the problems need not have remained insuperable had industry joined hands with scientists in a common endeavour to iron out the kinks. . . .

In the rare cases where the need for research results has been very pressing indeed, such cooperation has not been difficult to organize. The steelworks at Jamshedpur provides one such example: the acute problem of falling blast-furnace productivity arising from the high alumina in iron-ore has been tackled effectively by the National Metallurgical Laboratory working in concert with Tata Steel's own engineers.

Acknowledgement of the help given by the laboratory was made by the company's chairman in his annual address to shareholders. But much more satisfying is the fact that new facilities to over-

come the problem have been since designed and constructed by Indian engineers of Tata Steel utilizing the laboratory's recommendations.

Another striking example is provided by the Central Glass and Ceramic Research Institute which has developed the very highly specialized manufacture of optical glass required mainly by the Ministry of Defence. Here again the success achieved owes something to the cooperation of the Technical Development Establishment of the Ministry. . . .

The Atomic Energy Establishment at Trombay should likewise be given credit for major advances in mastering nuclear technology. The second atomic power plant near Kotah in Rajasthan will be built by Indian scientists and engineers themselves, with only the basic designs being obtained from Canada. A uranium mill is already being built at Jaduguda, near Jamshedpur, for which the flowsheet in this wholly unfamiliar technological field has been developed by the establishment itself and the engineering and construction entrusted to an Indian group.

Against the few instances of such successful cooperation between the research laboratory and the user of the results, there are unfortunately far too many where the reaction from the using end has been one of complete apathy.

Stung by Mr Nehru's somewhat sweeping strictures against the scientific establishment, made in the course of his address to the Science Congress last month, CSIR countered with a long recital of its own achievements. What it might have done more usefully was to produce a list of instances in which Mr Nehru's colleagues have failed to put impressive research results to any use.

The Central Building Research Institute worked out a new method of soil stabilization which claims to cut by almost half the expenditure for building asphalted roads. Two hundred miles of roads, built in the Punjab utilizing this technique were shown to have stood the test of time.

Extending this method to other areas with different climatic and soil conditions required further trials. CSIR made available to the states the money for each building a one-mile length, but there was still 'noticeable reluctance' on the part of state Public Works Departments to try out the method.

The need for stabilized soil roads is obvious because of the

savings possible in not only construction but also maintenance costs. The idea of setting up a fund for large-scale experimental construction has been in the air since 1956. This envisaged earmarking to the fund of 1.5 per cent of the cost of new construction and development works. But only two states agreed to this modest recommendation. . . .

The reasons for consumer resistance to research are not difficult to understand. First, adopting anything new involves taking some risk. The Indian administrative system does not encourage risk-taking by decision-makers because of the ever-present threat of pettifogging post-mortems in the event of failure.

There is a decided bias, therefore, against venturesomeness. This leads invariably to impossible demands for proofs that new ideas will work, which in many instances cannot be provided without full-scale trials which no one is willing to finance. Often, verification of proof will be entrusted to committees, not on the principle that several heads are better than one but merely to spread responsibility. With so many people determined not to risk their necks, committees generally vote against innovation.

This happens as much in government as in private industry except the defaults of the latter—which concern fewer people—are not so well publicized. There is for instance, the glaring example of a very large industrial group sending out a team to Europe to shop for new technology to be adopted in a major extension to an existing plant.

The team, taking the easy way out, adopted the simple expedient of recommending no change. This was decidedly odd because a public sector plant in the same industry opted in favour of a remarkable new process requiring lower capital costs and offering substantial production economies. Today, the decision not to make any change is being regretted and a preference publicly declared for the rejected process for the next round of expansion.

I V

Industrial conservatism is by no means an Indian monopoly. The committee headed by Sir Burke Trend which has just reported on organization of science in Britain has commented on the 'inhibitions', which hold back new developments in UK industry. The

reluctance, it is stated, adds to the difficulties of those trying to get a new idea into use and constitutes a positive disincentive to technical change.

Britain like India has a National Research Development Corporation, an entity separate from the CSIR counterpart, the Department of Scientific and Industrial Research. The Trend Committee wants both to function under the same aegis in a new set-up where the Department is reconstituted as the Industrial Research Development Authority and the Corporation made a division of it. It recommends, as a specific measure to speed up technical change, that 'where the government is a purchaser, a development contract can be used as an encouragement, but the development division of IRDA should consider, in addition, possible means of providing encouragement in those cases where no government purchase is in question.'

In the Indian setting, encouragement may be needed not only to try out domestically developed techniques but, as in the case cited above, promising new technology from overseas. . . .

The second factor holding up research utilization is the special difficulty in India of scaling up laboratory results to commercial scale production. . . . This is not an insuperable problem provided industry is prepared to cooperate.

There is, for instance, the work done over many years at the Central Fuel Research Institute on blending of non-coking coal with coking to stretch out our limited resources of the latter. The techniques have been tested on pilot plant scale, but full oven tests need to be run. This has at last been arranged by CSIR getting one set of tests done at a steel plant.

Full-scale tests will generally not be feasible without pilot plant studies. This is a matter in which CSIR is handicapped by the parsimonious release of foreign exchange to it. The endeavour is, therefore, either to get specific grants from friendly countries or to build the requisite equipment in India. Even domestic manufacture has an import content which has customarily to be covered by an actual users' licence. This too CSIR is often not in a position to provide.

This physical hurdle is serious but is amenable to correction. The biggest difficulty holding up research utilization is, however, entirely psychological which no reviewing committee can do any-

thing about. This is the nation-wide bias, present as acutely in government as in industry for the overseas expert and foreign know-how in preference to the Indian. Has Mr Nehru stopped to inquire how often this bias has come in the way of Indian research?

The bias, of course, is a legacy of our past, and one which we share with other developing nations. Professor Abdus Salam, Scientific Adviser to the President of Pakistan, made some pointed comments on this colonial trait in an address to the closing session of the UN conference on application of science and technology in developing nations held earlier this year in Geneva.

As Professor Salam pointed out, the doors which readily open to the foreign expert or scientists are all but shut to their domestic counterparts. The advice that the visiting dignitaries give today may be identical with what the native expert said years ago, . . . but was never listened to. . . .

Lest we should imagine this happens only in less developed Pakistan, it will be useful to recall here the example of the Rourkela fertilizer plant. Built at a cost of Rs 260,000,000 it can operate at only half its rated capacity because our administrators rejected out of hand the advice of Indian experts and preferred to rely on what a foreign firm of consultants told them.

The issue was a relatively simple one: what is the hydrogen content to be expected in coke oven gas using Indian coking coals? The foreign consultant put it at 59 per cent but the Indian experts, drawn from another state-owned fertilizer plant, thought this was at least 7 per cent too high. They brought with them the operating records of the coke ovens at Sindri, Jamshedpur and Burnpur to substantiate their fears but to no avail.

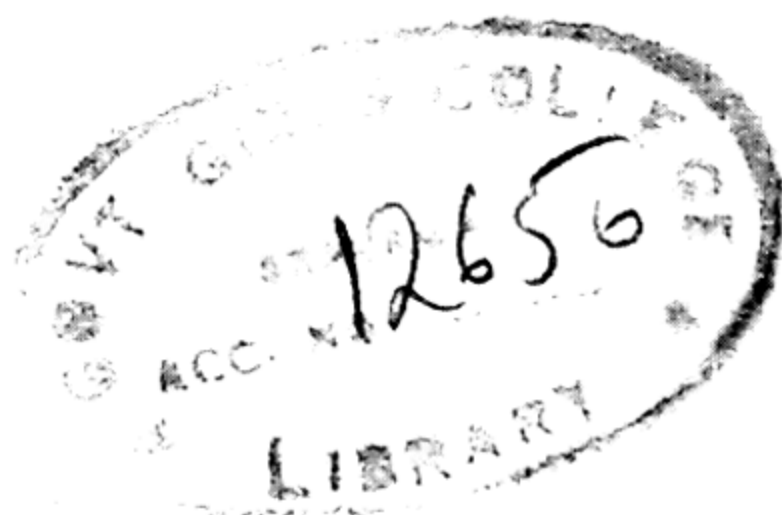
Such instances can be cited from practically every major industry. Are we still surprised that research and development does not make any headway in these daunting and demoralizing circumstances? Professor D. S. Kothari said in his address to the Indian Science Congress last month that one can plan for science but not plan science. Begging leave to disagree with this eminent scientist, one might say that it should not be impossible to plan science provided a sense of purpose and urgency can be imparted to the research endeavour by explicitly setting goals before the men and women engaged in it.

V

Any generalizations by a layman about what stimulates research may be risky because scientists themselves are unable to agree on an answer. As one eminent group of scientists has said 'knowledge about innovation is so slender that it becomes an impertinence to speculate concerning the conditions and institutions which may foster it or destroy it'. Notwithstanding the judgement, there is no reason to disbelieve the old adage that necessity is the mother of invention. . . .

This is seen from the forced-draft progress achieved under the compulsions of war with as dissimilar end-results as penicillin and the jet turbine developed during the second world war. . . .

Science cannot flourish in an environment where there is neither a positive demand for research results nor any deliberate policy of encouraging innovation. On the contrary, there are disincentives galore, but these unfortunately fall outside the purview of reviewing committees.



INDIAN SCIENTIFIC POLICY (II)

MEMORANDUM

submitted to the Review Committee of the Council of
Scientific and Industrial Research on
National Research Laboratories

by

THE INSTITUTE OF POLITICAL AND SOCIAL STUDIES

. . . OUR main submission is that the committee concentrates the major part of its effort to tackling the essential problem of creating a suitable climate for serious scientific research in the laboratories—a problem which is imperceptible, elusive and rather difficult to get hold of or even to formulate in words. This, we beg to submit, is the heart of the problem and we would request the committee to take evidence from such senior scientists and younger, competent researchers whose record of scientific work in the last few years is relatively outstanding, to find out the various facets of the problem and the extent of its existence. But for this it is probably necessary, rather unfortunately, to assure particularly the younger scientists that no harm would come about if they expressed their minds freely. It is our impression that the problem exists on a large scale in several laboratories.

Fortunately the previous Minister for Scientific Research and Cultural Affairs is, at least partially, aware of the problem. For only lately he stated at the Conference of Scientists and Educationists:

I regret to say that there is some justification for the complaint of the younger scientists. Their major difficulty centres round the problem of their relation to their senior colleagues. Younger scientists do not always have the freedom to initiate schemes of research and are often asked to carry out projects which are

favoured by their seniors. There is also some restriction on freedom to experiment. . . .

There have also been complaints about lack of freedom to publish the results of their research, but perhaps *the most serious drawback is the lack of an atmosphere of activity sustained by critical appreciation.* . . .

At present a scientist who feels unhappy in a particular situation cannot easily move elsewhere to work with more cooperative colleagues and in a more congenial atmosphere. The result is that not only does he not do work of which he is capable, but very often he acts as an irritant preventing good work by other members of the laboratory or institution where he may be working. The extension of the hierarchical structure of a *bureaucracy to the scientific field tends to accentuate a false sense of prestige due to status and office.*¹ (Italics ours).

Apart from the above statement of the minister, there is a general impression that the organization of national research has proliferated far too widely and far too quickly and that too much attention has been devoted to buildings, equipment, elaborate ceremonial symposia and functions, and foreign tours compared to training and raising the initial nucleus of research staff who would be less pretentious and less eager for publicity and for public relations with the authorities. Even now, we feel, too much attention is devoted to planning and persuading the Finance Ministry, the Planning Commission and the Prime Minister how to get more funds and how to open many more national laboratories on a grand scale. Scientific research in India over the last decade has admittedly expanded fantastically rapidly in terms of facilities and what is now required is to see that good, honest, substantial work is done by the scientists in each field without too much glare of publicity. Instead of that, it appears to us, the top scientific bureaucracy is more engaged in proliferating the bureaucracy itself. The organization is, in its natural course bound to expand at this stage of growth, but we see no point in *concentrating on this job* in a planned manner when the tasks of consolidation and of putting to good use the already existing facilities are in arrears.

¹ Cf. *Minerva*, II (Winter, 1964), 2, pp. 247-256.

The above remarks hint at the growth of a kind of vested interest in scientific research which itself has become almost a wing of the governmental bureaucracy. It is time, we feel, that a sense of perspective and of proportion should be brought to bear on this issue. Is it that planning, financing, administering and controlling of scientific research through a growing number of laboratories and institutions, each with an ever-expanding bureaucracy of its own, are stifling actual concentration on research, are baffling the talented researcher, and that those who are 'managing' the scientist are becoming much more important than the scientist himself? A parallel may be drawn from the Community Development Organization. The original idea in this latter scheme was to 'help' the actual producer in the village, the peasant. Instead, the far-flung CD bureaucracy today has become the boss, in one shape or the other, and the peasant has now to run after the official, the BDO. Thus, we raise the whole question of perspective and of focus in organizing scientific research, of the relation between means and end, between the scientist and his 'assistant', between the perceptive inquirer and the 'organizational instrument'. Is it possible that because of the intrusion of too much centralization, too much planning, too much overhead bureaucratization, and too much proximity of and dependence on the state, the 'spirit of science' in the world of scientific research is feeling caged and throttled, and that the scientific worker is tending to consider himself as merely a 'government employee' interested in his increased emoluments and grade, and in the prospect of his 'lift' in the ladder (some scientists also feel that the introduction of the pension scheme instead of a contributory provident fund or gratuity has made the scientist complacent and has also created greater immobility among them); and, as a consequence, he is given to petty jealousy and to a craving for his being noticed by the boss? It is our feeling that much of this spirit that pervades the ordinary department of a government is extant in the laboratories too. Under this prevailing situation, provision of more funds, more projects and more equipment will *not* bring more results, except to satisfy the dull bureaucrat who is interested in the *number* of papers and reports, not their intrinsic worth. We beg of the Review Committee to go into this basic question and not just technically

fulfil the task of reviewing the functioning of the laboratories.²

If what we apprehend is found to be true, the trend has to be arrested. It may perhaps be sophistically contended that such trends are inherent in the business of modern large-scale research based on highly developed industrial technology and the similar things are at work even abroad where research is well advanced. Statistics may not be wanting in support of this. Experience elsewhere should no doubt be taken into consideration, but only to draw lessons from them and not to justify one's shortcoming. Is it not a better method to examine more closely our own experience? It may be that because of the existence of a thick layer of authoritarianism in our cultural atmosphere and mental make-up, we so easily accept state authority and administrative hierarchy as more sacrosanct and obtaining a higher value than the efforts of the lone, self-reliant individual or small groups of individuals doggedly searching for truth. Otherwise how do we explain this lopsided and yet rapid development of the 'scientific superstructure' both in terms of physical facilities and terms of the administrative apparatus and the 'queen-bee' position that the latter has acquired in our country, while the value of the research in terms of quality is admittedly uninspiring? It is equally possible that the virus of 'giantism' may have also infected some of our science-planners who think of measuring our progress in science by the size of its budget and by the far-flung character of its expanding network.

Some Essential Questions

Some of the essential questions that, in our opinion, the committee should go into, in order to get the correct appreciation of the situation are:

1. Whether the laboratories are recruiting scientific workers, particularly in the senior grades, who have an *aptitude* for re-

² The Egerton Committee, the previous reviewing body, had pleaded for decentralization and this was given due form by the Sir J. C. Ghosh Committee in 1955. But unfortunately no substantial change took place and only lately, on the eve of this Review Committee meeting, has there been much talk of decentralization.

search as well as who have the basic competency in the particular field. It is not a question of having degrees and 'qualifications' in the formal sense. Some can teach well, some fit well in a manufacturing unit and some of a particular type of temperament only are keen for and good in research. How do the laboratory authorities satisfy themselves in this regard? Or is it that the laboratories are more full of persons who may be 'qualified' but may not be keen for research? (It is also an impression of some that if the projects are properly selected in terms of the needs of the industry concerned, many of the scientists who are not fruitfully engaged in the laboratories today could be entrusted with these. And there are many such problems). Or are narrow considerations like provincialism, casteism, etc., involved at the stage of recruitment? Or are the laboratories getting so crowded that workers who are more serious in research feel suffocated? How do the selection committees really function? It is our impression that members of selection committees, being busy people, do not take detailed interest and consequently the administrators have their way. Further, it may be worthwhile considering setting up a high level selection body for recruiting scientists on the pattern of the U.P.S.C.,³ free from the influence of the Director-General or the ministry, in order to avoid the defects in the present system.

2. How does the research scientist in a laboratory obtain guidance and critical appreciation of his efforts? Is there at least one such senior person in each laboratory who is doing this job? This is *the most vital function* to be performed. We have the impression that this aspect is very much neglected in several national laboratories. And the main reason is that the top man is himself either not good at this or is too busy in administrative work and in developing good relations with Delhi. If he himself is a second-rate man, it is likely that he would not like to have someone else perform this function, lest the latter steal the esteem that he thinks is his due. But unless this function is effectively performed, the laboratory is an utter waste of resources. By closely examining the working of each laboratory the committee must come to its conclusion, case by case, and recommend the required measures firmly. (It may be useful if the committee examined some of

³ Union Public Service Commission.

those scientists who left the laboratories and went elsewhere when disgusted with the state of affairs). An attitude of 'bossing' is noticeable in some of the directors, which plays havoc with the work of the serious scientists.

3. Is the attention of the laboratory *mainly* directed towards formulating research problems and trying to study them with the concentrated efforts of researchers working either singly or jointly; or are the senior scientists of the laboratory mainly busy in administrative work, in preparing reports, planning and holding successive conferences and seminars, writing review-type papers based on work done long ago, attending outside conferences, etc.? (There is an impression that the C.S.I.R.⁴ asks for endless reports without caring to go through the previous ones and the time of scientists is wasted in obtaining results already supplied). The point we want to make is: whether the laboratory organization is concentrating on the essence or merely wasting most of its energies on form and frills. This would depend upon the personality and the competence of the director of the laboratory. If the Review Committee is serious about discovering the reality, which we believe it is, it is not at all difficult to do so.

4. The quality and the quantity of the scientific papers produced by a laboratory in a year is another aspect that needs scrutiny. There is a tendency to produce more and more papers and to publish them in haste (or not to publish them at all because the director does not like them or because his name is not linked with them, although they may be worth publishing). Naturally the quality deteriorates, but to the lay administrator above him, this number impresses. The committee should, therefore, go into an assessment of the *quality* of these papers published by a laboratory. Too much waste of valuable time of researchers takes place in preparing popular or review-type articles or merely repetitive papers and reports when the actual advance in the laboratory in terms of scientific knowledge hardly justifies this effort. This craze needs to be controlled with a firm hand. (The Ghosh Committee also had criticized this trend but apparently with little effect in many cases.) It may also be useful to try to establish a tradition of discussing the research reports by a group of scientists in the laboratory, instead of sending them on to the director or

⁴ Council of Scientific and Industrial Research.

to one single person.

5. Most laboratories cover fields that are related to industries of one kind or the other. These industries, on the other hand, have innumerable problems that can be easily taken up by the relevant laboratories. But this can be possible only when the two wings establish close relationship and build up a sense of proximity and interdependence between them. To what extent has this sense developed? It is our impression that in many cases laboratories have exhibited a keenness to help industry and the industry concerned has responded well when the results of research appeared to be of some help to it. But in case of others, there having been no substantial research results forthcoming from the laboratory concerned, the industry concerned has generally not cared to take any serious interest in the work of the laboratory. This is quite understandable. The committee may, therefore, look into this aspect of the matter. It would not be an adequate plea on the part of the laboratory authorities that they did their best in urging the industry to take a closer interest in the laboratories when the latter have not much to offer. It may in some cases be true that some industries and firms are not very research-conscious, but, on the whole, no industry can for long afford to ignore results of research which will increase their profitability.

In this connection it may be relevant to consider whether it would not be more useful to make the laboratories (at least those whose fields are directly related to industries) dependent on a contribution of at least a part of their budget from the industries concerned instead of being completely dependent on state grants. Of course how industry could provide sustained grants to the laboratory is an aspect which would also require detailed consideration and the experience in other countries might be fruitfully examined.

6. There has been a renewed tendency to establish more regional research laboratories. Such laboratories overlap and duplicate the work of other specialized laboratories. Also, these regional laboratories take too large a range of problems to operate upon and as a consequence the scientific effort and resources in short supply are frittered away. It is a moot point if such a pattern should at all be encouraged; if not, the existing regional laboratories should be converted into specialized single-discipline ones, like the others. If, however, it is considered that such laboratories

are necessary these should be sponsored by the states concerned and the CSIR should not take these directly under its umbrella.

7. Similarly one has to examine if there are national laboratories which are duplicating each other's work or whether some of them are necessary at all. For instance, the starting of the Indian Institute of Petroleum at Dehra Dun a few years ago was perhaps not very justified. Petroleum research, at any rate in its present state, could well have been undertaken by opening a special section at the Central Fuel Research Institute with financial savings of great magnitude.

8. Recently, it appears, a sharp distinction has been made between the older scientists and the younger ones and it is implied that the younger ones are not receiving a fair chance. It is our impression too that things are not conducive to serious research work by many competent scientists. But it is most improper, even harmful, to attribute this difficulty to generational differences alone. This will introduce a most obnoxious element in the consideration of the issue and will promote unhealthy relationships within each laboratory.

We should be concerned not with the age of the scientist but with his competence; we must find out whether any talent or competence, regardless of the age of its possessor, is being suffocated or penalized. Also, the important work of research guidance by a senior colleague will be jeopardized if the proper articulation of the personalities of the researcher and his guide is disturbed by such irrelevant consideration.

Unfortunately, however, this argument of age-group has been offered by the authorities of the CSIR themselves on several occasions. Coming from such a high quarter, it does encourage irresponsible attitudes at a lower level and creates a kind of unhelpful 'pressure from below' against the individual laboratory authorities who may not be in the good books of the CSIR. This is a trend that is growing and needs to be strongly deprecated.

The above questions, we think, should draw the committee's *primary* attention. The 27 national laboratories and other allied research institutions are housed and equipped to a substantial extent by now, and more facilities will be forthcoming in the years to follow. Compared with the situation a decade back this is a

great advance in the physical and quantitative sense. But the question is: *has a suitable research leadership emerged in each of these institutions; has there developed a proper climate which spurs the researcher to do his job well?* This is the essential task of the inquiry. Let not the committee waste much of its time in petty details or get side-tracked into the by-lanes. This is our most fervent request.

A Few Allied Problems

Having raised the above issues, may we now discuss some of the allied problems?

The kingpin of a research laboratory, as at present conceived, is the director. Therefore we fail to understand how a laboratory is effectively run without a director for years together. But such a phenomenon is not infrequent and we would like the committee to find out exactly why such a thing should at all happen. Things must be rather in a bad way at the upper echelons of our scientific administration for this to be possible. The non-appointment of a director of a laboratory for such a length of time in more than one case, when investigated thoroughly and when lame excuses are discarded, may help to indicate the kind of strains and pulls and their social background that have become a part and parcel of the present-day research bureaucracy. (Allied with this problem of recruitment is the matter of appointment of deputy directors of laboratories with powers of the director by the CSIR without any public advertisement for the posts. Six such appointments have been made, by the CSIR in the last six months or so and all these officers, interestingly enough, come, we understand, from one regional laboratory. There has also been a case where an assistant director was appointed without the knowledge of the director).

Similarly, we find that out of a total of 27 laboratories, only a few are competently guided as research bodies. The quality of work of the latter speaks for itself, the quiet but vigorous and serious climate for research in these laboratories contrasts conspicuously with the many. The committee can easily discover them. The credit for this goes mainly to the directors of these laboratories. It may be useful to ask these directors how they do their jobs. Certain criteria may then emerge out of such a discussion

that may be found suitable for Indian conditions and these may then be applied on the others, although this is a field where too much generalization is always risky.

One general policy question arises out of this. Should the director of a research laboratory be essentially an administrator or a scientist more devoted to research, including his own? Nothing could be better than a person who has a nice blend of both the aptitudes. But if a choice has to be made at this initial phase of evolution of our scientific research where great handicaps have still to be made up, the director should, in our opinion, be more a scientist rooted in his own research, and his administrative work should be subsidiary. As at present the director is much too involved and burdened with administrative work and has very little time and, more particularly, attention, for either his own research or for helping and guiding others. Of course a person with a strong will can still make his own time. But generally the administrative load of the director should be considerably reduced. These, first all, need to be simplified and secondly, can better be handled by an administrative officer. In other words, the whole atmosphere of the laboratory should be changed from one of a government department to an institution dedicated to research. It appears from reports of recent discussions that a realization of this has dawned. There is, however, another aspect of it. The directors have, even as things stand today, a lot of autonomy as well as a fair-sized administrative staff to permit them time enough for their own research. But perhaps many of them like to take too much interest in administrative details and get themselves involved in matters that could be left to others. What this is due to is an issue important enough to be investigated.

The core of a laboratory, its very soul, should be built round *persons*, and the leading person should be the director. The director should have a substantial voice in picking his immediate colleagues and his success in selection should be measured by their contribution to scientific advance. If then the committee finds that a director of a laboratory has not proved his worth in several years, some way should be found to relieve him of the responsibility. This is the way we look at the vital problem.

Unfortunately, however, the chain of laboratories organized with the CSIR has taken the pattern of a vast administrative com-

plex within a scientific community, which is partly autonomous and partly pulled and influenced by various kinds of irrelevant forces, including political. As a consequence, the whole climate and perspective of our national laboratory system has been distorted. The real worth of a director in such a context hardly comes to be assessed on merits. We believe, that if Indian research is to make adequate progress, this whole atmosphere needs to be cleansed.

On paper, the laboratories are substantially autonomous and there is almost hardly anything more that one may ask for. But who can resist the operation of the authoritarian mentality within us? The pattern of relationships between the CSIR and the laboratories is far from healthy. Many directors make it their business to rush to Delhi very frequently. Their attitude towards the Director-General and other senior officers of the CSIR seems to be rather suppliant. Constitutionally it need not be so, but it is there as a fact. It does not appear, however, that the Directors-General have discouraged such an attitude. The Director-General is mostly on tour—about 20 days in a month apart from his frequent tours abroad. The business of the Director-General at his headquarters is consequently run by his subordinates. We understand that few of the senior officers of the CSIR are scientists themselves but they sit in judgement on many matters pertaining to research administration over the director's judgement and the Director-General is naturally too busy to look into all such decisions personally.

This whole pattern of relationship needs to be closely studied. First of all the directors are at fault in not fully exercising their authority and power of decision-making, and in seeking advice and guidance (which they, in effect, take as orders) from the CSIR and the Director-General on matters which they themselves could and should decide. Secondly, these directorships are considered as essentially highly paid administrative jobs to which scientists who are no longer very keen on research seem to have been attracted. And many directors are chosen in a manner that indicates that merit alone does not count and that the Director-General is, so to say, the centre of gravity. Naturally, therefore, their attitude to the Director-General and the CSIR establishment appears rather to be one of subservience and sycophancy because to them jobs have become more important than science.

Thirdly, the entire financial business of the national laboratories is administered by the CSIR and a tradition has developed in which, despite formal autonomy the most minute details of laboratory administration are actually decided by the CSIR over the telephone or through personal discussion. . . .

As we noted earlier, there is a dual responsibility for this peculiar relationship between the laboratory and the CSIR. The Director-General is no less responsible for it than the directors. He is the head of a central organization, allocating and administering most of the funds for research on behalf of the Government of India. A certain degree of 'looking-forward-to' is, in a sense, only to be expected from those organizations which depend for their very existence on the decisions of the Director-General. Possibly it is more in the case in India than in some of the Western countries. But the Director-General should make it a point to see that he decides only the required minimum and he should refuse even to advise the directors on matters which do not need his decision or opinion. . . . This is just the contrary of what actually takes place.

Thus, it appears to us, that the problem of disentangling the cobwebs of the various pulls and pressures would lead an honest inquirer into realms which one fears to tread.

This leads us further to inquire exactly how the Director-General has been chosen in the past? What kind of influences actually operate? Are political and parochial or personal considerations and likes and dislikes also important factors? We understand that the Union Public Service Commission does not come into the picture at all in most of the senior appointments of the CSIR. It would therefore not be surprising if vested interests resting on the proximity and the mood of the men who count in government, have built comfortable niches in this rather carefully screened corner of India's scientific community. There has been frequent use of the clause in the CSIR Constitution which empowers the President to forgo the normal rules of selection of scientific officers in the higher cadre. It is understandably expected that the President would not be able to give attention to individual cases but it is quite possible that taking advantage of his generally enthusiastic support to science others secure his formal consent on many matters on the basis of the clause referred to above.

Also, it is desirable to reduce the jurisdiction and functions of the CSIR as suggested by the Ghosh Committee, although we are aware of the risks of making the directors more free and independent. But we think the risk involved has potentialities both for good and evil. The governing body of the CSIR may also need to be differently composed bringing in representatives of major scientific bodies and reducing the number of non-scientists.

Our Prime Minister . . . has taken great interest in the development of science in this country for a long time and it is due to his active patronage that so much has been achieved. But we believe that taking advantage of his personal interest, there is a tendency toward private empire-building in the realm of science and this attitude itself is coming in the way of the growth of science, which requires the growth of the *scientific spirit* and not of the giant institutions. The post of the Director-General is an important and vital one. (In this connection it is very pertinent to note that this office was first entitled 'director', but possibly since he had to be in ascendancy over other directors this was changed to 'Director-General'. Similarly the Secretary of the CSIR was not originally a very important and controlling post. This, too, has changed its character in the last few years). It should be given to a very competent scientist after a very exacting and careful scrutiny. Furthermore, after a study of the degree of domination of the Director-General and the CSIR over the laboratories that has *actually* emerged, . . . howsoever unintentionally, it may be necessary to develop further checks and balances so that this undue dominance is reduced. It is also necessary to consider whether the CSIR as an autonomous body should at all be linked officially with the Prime Minister, for the spirit of autonomy, which in experience has been found to be most difficult to maintain, gets further eroded by this link. The Prime Minister has innumerable ways and opportunities of encouraging science and the scientist, and when we find that his direct relationship with the CSIR (which is dealt with by a separate ministry) is capable of being misused (if it has not already been so) in a way for which he may not be responsible, it is but proper that the Prime Minister should keep at a correct distance from it.

Thus, as far as we have been able to see, scientific research in some of our national laboratories (though not in all) has not

yet been able to develop a momentum because of a lopsided emphasis on physical facilities and organizational bureaucracy in contrast with a proper selection and careful nurturing of the researcher, because its growth is completely dependent on state planning, resources and control by a centralized bureaucracy. But all this is itself due to an intellectual and psychological climate that feeds the authoritarian outlook. It feeds those who love power and also those who love to submit and to surrender. Therefore, not only have we to refashion the organizational structure of science in order to meet this basic problem, we have also to attack this all pervading authoritarian climate itself.

Calcutta 31

30 November 1963.

INDIAN SCIENTIFIC POLICY (III)

SCIENCE AND GOVERNMENT

P. MAHESHWARI¹

The Educational Background

THERE was a good deal of excellent science in ancient India . . . but this . . . was unfortunately not kept up and we got into slumber. There was an awakening in the nineteenth and twentieth centuries and we produced some excellent scientists like Ramanujam, J. C. Bose, P. C. Ray, M. N. Saha, B. Sahni, K. S. Krishnan (among those who are living the name of C. V. Raman is pre-eminent) but for a large country with such a huge population, this is insignificant. Since no nation has a monopoly on intelligence and our genetic potential is in no way inferior to that of the wealthier and more advanced nations, this trouble naturally lies elsewhere. How to improve the situation so as to get the best out of our scholars and what should be done in order to increase the number of good scholars are questions that loom large before us. They are indeed the most important questions of the day, although they seldom appear in the newspapers.

In order to increase the number of persons engaged in a scientific career we must naturally start at the school stage. With the increasingly important role that science is destined to play in our lives, it is imperative that no student should pass the Higher Secondary or High School examination without an integrated course in science. . . .

To attract better students to a science career the government must emphasize by all possible means, such as popular articles and announcements in the press, that scientists can render a vital

¹ Presidential Address by Professor P. Maheshwari, University of Delhi, to the 33rd Annual Meeting of the National Academy of Sciences, India, held in Allahabad, 15 and 16 February, 1964. (Allahabad: National Academy of Sciences, 1964).

service to the country and that suitable positions with adequate salaries would be available to all young men who have undergone a training in science. We must also increase not only the number but also the value of the scholarships in science. The present scheme for search of talent (launched by the National Council of Education Research and Training) is to be welcomed for here an attempt is being made to test the students for their aptitude in science and to finance their future studies in places which are most suited for this purpose.

In addition, of course, the facilities for the study of science in schools and colleges have to be vastly improved. The nation's scientists may be diagrammed as a sort of pyramid with the students of the Higher Secondary level forming the base. Some of them will be unsuccessful and a good many will drop out for other reasons. This will also recur at the B.Sc. and M.Sc. levels and finally only a small percentage will do successful research for the Ph.D. It is therefore obvious that to obtain a few top leaders in science, there has to be a large base of reasonably good quality from which there will be repeated skimmings of the cream at successively higher levels. At the same time we must reduce the casualties at the various levels not by lowering the standards but by increasing the efficiency of the teachers and our educational system. . . . By thus giving the opportunities for a scientific career to all who are above the average, we shall build up not only some fine scientists but also create a scientific environment in the whole country. In other words we shall have a populace which will have sympathy for science, which will set some tasks for scientists and which will in turn do something to fulfil the demands of the scientists themselves.

Centres of Advanced Study

While it is important to improve the science education in our schools and colleges, it is even more essential to raise the quality of the research work of our Ph.D. students and staff. It is naturally not possible to collect all the fine equipment in every science department and for all branches of a subject. The UGC has, therefore, very wisely adopted the policy of establishing several advanced centres of research in favourable places. For this they have provided some extra staff and equipment as well as a grant

for recurring expenditure. . . . The men trained at these centres will be available to other universities to strengthen their departments, and the possibility of receiving these extra grants may well start a spirit of healthy competition between one institution and another. It is of course important to see that this pursuit of excellence is genuine and no other criterion except sheer merit is allowed to influence the decision of the UGC in setting up these centres.

Employment of Women Scientists

Although the Indian Constitution guarantees equal rights to both men and women, it is rare to find women scientists in the employment of the government or the universities. Due to the limitations imposed by marriage, . . . women are often unable to devote long hours of continuous work. After their college and university education is over, they adopt a rather casual attitude to their duties and ask for frequent leave of absence for long durations. Under these conditions it is not only difficult for them to keep abreast of the literature on the subject but they also lose the mental alertness which they displayed before marriage. Employers are, therefore, inclined to prefer men rather than women. However, under the present conditions when so many girls receive the M.Sc. and Ph.D. degrees in botany and zoology, and there are many unfilled jobs due to a scarcity of qualified men, it might be desirable to institute part-time positions in which women scientists can work for three or four hours a day and then return to their family duties. Their talent, it seems, ought not to be wasted in these critical days when there are so few scientists available in the country. . . .

Sending Students Abroad for Higher Education

Until about 15 years ago there were no great problems about Indian students going overseas. Those who got such opportunities considered themselves specially fortunate and there was general satisfaction about this. The numbers of these young men were small, they were usually financed by their parents, they had little opportunity for overseas employment, and they naturally returned home after completing their work in two or three years. Now the position is different. There are numerous fellowships in every

advanced country and it is estimated that presently there are no less than 10,000 Indians studying abroad in the fields of science and technology alone.

Two points must be considered in this connection. One is the proper selection of the students to be sent abroad and the other is that of ensuring their return to serve the motherland. Apart from the students chosen by the Ministry of Education there are a good many who receive fellowships from other countries through their own efforts by correspondence with various professors and directors of research. Whereas some of these men are quite sincere and have definite objectives, others are not worried about the choice of the subject or of the professor but go abroad merely to increase their market value in comparison to those who remain in India. . . . There are adequate facilities now in many institutions in our own country for work leading to the doctor's degree and more are being developed at a rapid rate. Should not Indian students, therefore, go abroad only to seek such knowledge, techniques and experience as cannot be obtained locally? Should they not normally be post doctoral scholars and persons holding appointments here to which they will return after working overseas for one or two years?

. . . Indian students going abroad just to pass examinations and obtain foreign diplomas and degrees should be definitely discouraged from this attempt. It should be impressed on them and proper steps taken to ensure it that their market value will not increase merely by their doing elsewhere what can be done equally well in their own country. Secondly, the universities and institutes in India should be strengthened to take care of a larger number of students working for the doctor's degree and to improve the facilities for research in various branches. . . . [A] third point is the choice of the subject. Many a time an Indian student has gone abroad for the study of some glamorous problem without any concern about the continuation of such work on his return to India. This naturally causes him a lot of frustration but it is largely his own fault. To remedy this evil, there should be advisory committees on an all-India basis in different branches of science who will interview intending candidates and advise them as to the place and subject of their studies. Many American professors have spoken of the difficulty experienced by them in judging the re-

lative merits of Indian scholars applying to them for fellowships and expressed the view that it would be a great help if a screening committee here would select only the best students for higher studies in the USA.

A Two-Way Traffic in Science

There is also another aspect of this foreign travel. . . . At present . . . our facilities and know-how are not up to the mark to attract notice in the more developed countries. However, it is entirely possible that students from some countries like Argentina, Egypt, Hungary, Indonesia, Japan, Malaya, Nigeria, Poland and Turkey may like to work here under some distinguished professors. But we have so far no way of subsidizing these scholars. While Indian scholars get free board, lodging and tuition from our big brothers like the UK, USA and Germany, is it not our duty in turn to do something for scholars from countries whose resources in men and materials are not even as good as ours? We are a part of the brotherhood of nations and we must do unto others what is being done for us.

Everything that is possible should be done to encourage this two-way traffic. We should set up fellowships for people coming from other countries if they require financial help and create facilities for their work. If there are institutes or departments which are able to attract foreign scholars by the excellence of their work, these need to be fostered with greater care than others. Admittedly, we cannot lead world sciences except in a few areas but wherever such areas exist these places should be more generously subsidized so that we also draw scholars from elsewhere and our prestige in science does not remain at its present low level.

The Scientists' Pool

In order that the young scientist, who returns from abroad, does not feel stranded, the CSIR, under the Ministry of Education and Science, has constituted a Pool in which the monthly emoluments vary from Rs. 500 to 700 (sometimes more) plus the dearness and other allowances admissible to Class I officers of the CSIR. Theoretically, persons with Indian qualifications are also eligible but for all practical purposes the selection is limited to those returning from abroad. According to a recent decision of the Cabinet every eligible person is to be absorbed in the Pool.

While the object is laudable, there are several points which need to be considered very carefully. In the first place this arrangement places a premium on a foreign doctorate and thus continues to draw people away from the country even in such cases where proper facilities exist in our own universities. It is a common experience that the best students with a first class bachelor's and master's degree immediately receive a fellowship of Rs. 250 per month from the CSIR, ICAR, UGC, Atomic Energy Commission or some other source, and usually remain in India while others who fail to receive such fellowships look for something outside the country. A good many of them go to the USA. On their return they receive a post in the Pool on Rs. 600 or so whereas the students, who have taken their doctorate in this country and are often potentially more capable, are given only Rs. 400.

Further, the man who is in the Pool continues to draw his salary almost indefinitely. He has thus no inclination to apply for any but a Class I job or a readership in the university. He is not willing to be considered for a lecturership where the starting salary is only Rs. 400 per month. Usually he is not immediately acceptable for a readership or a Class I job but since he can remain in the Pool as long as he likes and with only some nominal work, it is no disadvantage to him. The result is that while there are many vacancies (sometimes 30 per cent of the total) in almost all institutions, they remain unfilled and the services of these young men remain unutilized.

The following steps are suggested to remedy the situation:

1. Although a Pool post should be available immediately after a person's return from abroad, it may be provided on a one-year basis during which time the beneficiary ought to find a place for himself. Normally a fresh Ph.D. should be given only Rs. 400 unless all postdoctoral fellowships and lecturerships in universities are advanced to Rs. 600. By starting the Pool scientist on a higher basis, his chances for permanent and useful appointment are not improved but actually decreased. However, as I shall explain later, I would personally prefer all science posts for men with a doctorate or equivalent qualifications to be graded from Rs. 600 to Rs. 1,800.

2. It is to be noted that most directors of institutes or heads of university departments are not too enthusiastic about having Pool officers posted in their laboratories. It is feared that these men take it as a stop-gap arrangement and fail to make any substantial contribution.

The Distribution of our Scientific Effort

. . . How are we to judge whether our present emphasis on . . . [the various] fields [of science] is correct? Since we cannot be active at all points at once, gaps must exist in several places. The question is to find out which gaps are the most critical. These are the ones that must be rectified.

Unfortunately, no one seems to have made a careful assessment of our future requirements of scientists of different kinds based on the pattern of national development and economic growth during the next 10 or 15 years. While there may well be adequate freedom for the specially brilliant to follow any line of inquiry they please, there should be some reasonable basis for the distribution of our scientific effort. . . .

To take an example . . . we are all very much concerned about the problems of food and of overpopulation. Here I should like to quote Dr D. S. Kothari, Chairman of the University Grants Commission, as to our requirements in applied biology and agriculture: 'For example, the percentage of agricultural students in the university population in India is about the same as it is in the UK. It is much less than what it is, say, in the USSR, China or Japan. Modern agriculture is really applied biology. It is necessary in relation to our plans of agricultural development and increased food production that the effort on agricultural education should be very much more than what it is today.'

. . . We pay much lip-service to the food problem but have we done anything substantial to solve it? If the input is so little, can we expect the output to be very large? If food, health and the control of population are our major problems today, is it not logical that greater attention be paid to them than to the other things for which there is less urgency?

. . .
With 80 per cent of the population engaged in agriculture this

is easily our largest industry. Is it not important then that more attention be devoted to applied biology—extension work as well as research?

Emoluments

As pointed out already much of the competition in the modern world is a competition in scientific attainments. The most important investment of a country's revenue must, therefore, be in the scientists themselves. This point . . . is not sufficiently appreciated in India and is one of the reasons why many of our men are taking employments in foreign countries. There have been cases when Indian scholars came here to examine the possibilities of securing a suitable job but were disappointed and returned within a few weeks. It is difficult to estimate the number of Indian scientists and technologists staying abroad but assuming that it is only 5 per cent of the total, the trend is decidedly on the increase. An exposure to the wonderfully well equipped laboratories of the USA, a taste of their high standard of living, and the possibility of securing jobs carrying salaries many times as high as ours, all combine to act like a magnet on our young men and women. . . .

While the situation here is not quite so serious as in Britain which seems to be losing 10-12 per cent of its scientists to the USA, it demands consideration because of our perpetual dearth of good scientists and the fact that with our present rate of expansion many posts are already lying unfilled. A few suggestions are offered below to remedy this situation:

Since science and technology are admittedly the most important branches of knowledge in the modern world, special incentives must be provided by awarding scholarships of higher value in these subjects and further assuring that the pay and prospects will also be higher in these fields than in others. This is already being done in the USSR with great advantage. In India also professors in the medical and engineering colleges are being paid more than their counterparts in the pure sciences. However, if we need more scientists of all kinds, should they not be placed on par without sorting them in a differential pattern?

Young scientists all over the country complain about the lack of opportunities for advancement and about the big road-blocks that lie in their path no matter how good they may be . . . the

best solution would be to place all scientists with a doctorate or equivalent qualification after they have passed through a proper selection committee in one uniform scale of Rs. 600-1,800 with three or four efficiency bars at suitable intervals when an expert committee would evaluate and assess their performance. Not all will cross these bars but the fact that the opportunity exists for every one to do so will surely put a person at ease and stimulate him into an effort which he may not be inclined to put in otherwise. For persons of exceptional merit there should be a further possibility of promotion to a grade of Rs. 1,800-3,000 so that the salaries of the best scientists are not below those in the administrative field. . . . Unless this is done there will always be a tendency for the scientist to look wistfully to an administrative career.

The creation of a uniform scale of Rs. 600-1,800 has many other advantages. To give an example, suppose that a person is serving in the Central Potato Research Institute on Rs. 600-1,000 per month and a post is advertised in the Rice Research Institute on Rs. 700-1,200, he would be glad to bury the potato and transfer his affections to rice. This would mean in effect that he will leave the crop with which he obtained some familiarity for one about which he knows nothing. While under certain circumstances such transfers are possible, effective work requires that such occasions be reduced to the minimum. This is easily achieved by providing the uniform scale mentioned above to all entrants in the scientific service.

A word may be said about the posts in the universities. There is a general feeling that in selecting persons for higher jobs (say readerships and professorships) the age and experience of the candidate is a strong factor in his favour. Such a practice is extremely unsatisfactory, for the guiding criterion should be . . . ability alone. Experience comes automatically but intrinsic worth and creative talent are the result of heredity and hard work. The ideas which I have set forth about the creation of a uniform scale for scientists should also apply to the universities but no real good will come unless the periodic assessments of the work of the candidate are made without fear or favouritism.

It was a good idea that the government set up some national professorships for the most distinguished men in the arts and

sciences. These are posts of honour carrying much higher emoluments than the usual professorial chairs and giving the holder considerable freedom as to the place or subject of his research without being bothered by administrative and other distractions. However, people are seldom elected to such positions until after they are 60-65 years old or more. While on the one hand it has been said that brilliant ideas seldom come after the age of 30-35 (in physical sciences) and 40-45 (in biological sciences), it seems strange that the national professorships should be awarded at such a late age in life. One would think that 50-55 would be about the right age to spot the most gifted individuals so that they can be removed from administrative duties and permitted to spend the rest of their lives in purely creative work without the hindrances that beset the path of the overworked administrator. . . .

According to some persons it is good that there is now a competition for scientific talent all over the world. Many professors in the U.S.A. have said in private that if they hire scientists on good salaries from other countries this itself will perhaps force the latter (India among them) to pay their scientists well and to improve the conditions for their work. The slow, pedestrian manner in which things move in Asia makes one feel that perhaps they are right and it is only a thorough shake-up which will open the eyes of the public to the need for giving the scientists greater recognition than they have received so far.

Our Disinclination to Work

. . . Many visitors have remarked . . . that Indians are not serious about their work and that they are more interested in postponing things and in finding excuses for not doing a job. They are also said to be casual, unmethodical and slovenly in their behaviour and duties. If one were to visit any governmental or other office here and compare it with one in the UK or the USA such an impression does not appear unjustified. Nothing seems to move here without half a dozen reminders and personal interviews with officials at three or four levels. There is no sense of urgency in anything and each person passes the ball to the next without anyone doing anything very tangible. However, at least a part of the blame must be shared by the senior officers themselves. Do they go in time if not before time to their respective offices and remain

on until after 5 o'clock? How much time do they spend in celebrations and inaugurations of various functions and how much in actual work? Do the scientists themselves spend long hours of concentrated work in the laboratory and do they fully utilize their spare hours in thought and study and research?

While there should be a reasonable limit to the number of 'periods' a scientist is called upon to devote to teaching, there can be no ceiling on the hours he may wish to devote to research work. Here the greater the time put in, the greater will be the rewards. A genius is the result of 90 per cent perspiration and 10 per cent inspiration. Is not personal example better than precept? If we, the older people, set a high example of devotion and spend regular hours of consistent research in the laboratory it is highly improbable that our younger colleagues and Ph.D. students would fail to respond. . . . If the proper example is not there, it will always be tempting for the juniors to sit and consume dozens of cups of tea instead of doing honest research.

Six ways come to my mind to stimulate research: (1) to select men with the best ability and experience for each post; (2) to provide a reasonably good starting salary (say Rs. 600 per month) to qualified persons who have done work of the doctoral standard; (3) to assure every one of the opportunities for professional advancement based on achievement and ability only; (4) to provide the necessary facilities such as space, equipment, technical help and money for recurring expenditures; (5) to make an impartial assessment of the work of every individual from time to time; and (6) to see that while the real worker is rewarded with special increments and a recognition of his efforts, the sluggards are ruthlessly weeded out.

. . . Permanency in a post is usually linked to our concept of academic freedom. This provides a person with the desired protection and freedom from worry which are so necessary for the pursuit of knowledge. However, quite often this security of tenure has itself become a shelter for incompetence and mediocrity. Once a man has been appointed, he feels himself a little too secure and prone to go even to a court of law for any action taken against him for his inability to deliver the goods.

It is this kind of a situation which is responsible to a large degree for the low output of research in our country. Although scien-

tists are greatly valued in the U.S.S.R. and paid much better than in other professions there is no permanency or security for them if their output is unsatisfactory. In the U.S.A. also there is no permanency for instructors and assistant professors who are appointed on a year to year basis. It is only after a man has been tried in such positions for at least five years that he may expect to get a tenure post such as an associate professorship.

The Human Element in Research

. . . Misunderstandings often arise about the authorship of a paper. There are complaints about directors causing delays in forwarding the papers of their junior colleagues for publication. This is perhaps true in some cases and is to be regretted. Yet the sweeping statements often made these days of senior scientists exploiting their juniors are far from true. In fact senior scientists often give away much of their productive time only to create more opportunities for young people to work with them, take their doctorates and then go into the wide world so that they can initiate others into the path of research. For a 'guru' it is a real pleasure to be excelled by his own pupil. Did not Dronacharya have his greatest satisfaction in having Arjun excel him in the art of archery and did not Arjun cherish a life-long reverence to his teacher?

It is to be regretted that the director is himself rarely able to do any research work. He has to spend most of his time in making budgets; ordering equipment; signing contingency vouchers and salary bills; preparing schemes for the five year plans; interviewing candidates for his own institution and others; attending innumerable committee meetings at his own place and elsewhere; in giving lectures both inside and outside his organization; in editing journals; in scrutinizing papers for other journals; in replying to queries from various sources, both in India and outside; in sending, receiving and acknowledging reprints of publications; in consultations with his Ph.D. students and staff; and in scrutinizing . . . Ph.D. theses and research papers. He has to coordinate research work involving the participation of the several sectional heads under him and send periodical reports on it. He has also to spend a good bit of his time in diplomatic tussles, both above and below, in order to achieve his objectives.

All this and the difficulty of evoking a response from the authorities without a succession of reminders and personal contacts leaves him little time to do any active work. Not only this, unless he is extremely conscientious and hardworking he finds it difficult even to keep pace with the growing literature on the subject.

This is a sad state of affairs indeed, for the primary role of the head of a laboratory is creative, and not that of an accountant or administrator. All scientists called upon to do much work of this kind ought to be given effective technical assistance so that their time is not wasted with minor details and they are able to get a few hours every day for quiet study and thought and act as catalysts of research. It is a pity that our universities and government institutes follow a penny-wise and pound-foolish policy in attaching so little value to the time of their top scientists. If they were merely to provide every head of a large laboratory with an efficient administrative secretary on a pay of Rs. 500-800 per month they could save him from much harassment and get much more creative work out of him than at present. In no industry would the management make the mistake of burdening its key men with petty jobs which can be done by persons of lower qualifications.

Red Tape

Another disturbing factor to a research department is the severe limitation imposed on it both for cash purchases of petty articles and for ordering more costly apparatus. For cash purchases there seems to be a ceiling of Rs. 20 per item and even for orders to be placed after calling numerous quotations and sealed tenders there is a limit of Rs. 2,000 or so. For values beyond these, higher authorities are to be consulted irrespective of the availability of adequate funds.

. . . For cash purchase of any particular item the limit should be raised to Rs. 100; and for orders for apparatus and equipment—once the usual formalities of calling for quotations and comparing them have been fulfilled—there should be no limit at all except the availability of funds. The present procedure is a great impediment in scientific work and a source of much frustration. Due to our involved procedure and inordinate delays in obtaining the goods, they are often sold out and once again one has

to go through the process of inviting fresh quotations.

During recent years our troubles have only increased still further. Apart from the inevitable quotations and sealed tenders which have always been there one must now obtain a *pro forma* invoice, an import licence, a 'Not Manufactured in India' certificate and so on. Each one of these is a long and arduous business and all of them together would sap the vitality of any normal person. The period of waiting, in spite of numerous reminders at every level, extends to anything between 12 to 15 months. Meanwhile, the prices change and one may have to proceed all over again. Even photographic goods and drawing materials, so essential for biological work, have often been difficult to obtain in the open market. The whole system of accounting, internal and external auditing, and inviting sealed tenders for buying even a few chemicals, creates a sense of annoyance and disappointment, particularly in the minds of those returning from abroad who have seen their professors ordering costly articles merely by making a telephone call. To these people at least it appears that most of the officials and procedures in our country exist only to delay things until the arrival of the end of the financial year when the purse strings suddenly open from nowhere and there is a desperate hurry to squander what remains. This process has perforce converted many able heads of departments into mere accountants and fillers of forms.

Foreign Exchange

While . . . red tape has been in existence for many years, additional difficulties have recently cropped [up] due to the lack of foreign exchange. In a meeting of scientists, held in August, 1963, and presided over by the Minister for Scientific Research and Cultural Affairs, many distinguished scientists stressed the need for more foreign exchange to buy special apparatus and equipment. However, no appreciable progress has been made in this direction. These difficulties still persist not only for the purchase of new equipment but even for the repair of existing instruments. To take an example, even if only the lenses of a microscope require resetting and polishing one has to go through pretty nearly the same involved procedure as for buying a new item.

Foreign exchange is also urgently needed for buying books and

periodicals, for sending membership fees to learned societies, and for purchasing reprints of papers published in foreign journals. Many scientists have experience of the delays and annoyance caused to them even in these minor matters and the supercilious manner in which the government officials sometimes treat them. If scientists cannot be paid better, can they not at least be shown more consideration in these matters?

Sometimes an Indian scientist is invited to contribute a paper to a congress held abroad and even to preside over a part of its deliberations. It would be ungrateful not to acknowledge the support our government has given to many persons with regard to their transport but the greatest difficulties are created even for an allowance of £50 or so to maintain the scientist for a few days in a foreign country. The result is that he has to exist on the charity of others and put himself into a humiliating position, not only for himself but also for his country, just because of the lack of a few pounds or dollars. Such restrictions are inconsistent with our concepts of academic freedom. Whatever the stringencies, will a young . . . scientist continue to have respect for his country if he is sent away to a distance of 10,000 miles with a bare Rs. 25-75 in his pocket while any number of 'cultural' missions consisting of dancers and musicians travel all over the world without hindrance? These are little things but it is a dozen pin-pricks of this nature which affect a man more than one major item. He thereby becomes a stranger to his own land and transfers his loyalty to the country which gave him some small support in his hour of need.

In the meeting of scientists held on August 4, 1963, Professor Humayun Kabir, then Minister for Scientific and Cultural Affairs, was constrained to remark as follows:

When one considers the figures involved, it is surprising that there should be bottle-necks of this type. The total requirement of foreign exchange for equipment for technical training has been estimated at about Rs. 110 million for the whole of the Third Five Year Plan. For research laboratories also the figure is about Rs. 100 million for the whole Third Five Year Plan. In other words, less than Rs. 250 million is required for equipment for training and research for the whole of the Third

Five Year Plan and yet this amount is not always readily available. Can there be any defence for this when we are receiving foreign aid at the level of about Rs. 6,000 million a year exclusive of the value of exports?

I would not be surprised if the degree of vexation involved in obtaining equipment abroad is even known to the senior officers in the Secretariat. I shall recapitulate it below so that public opinion is mobilized in the matter and speedy action taken to remedy the situation. At the outset we must wait for the announcement of release of foreign exchange (this usually trickles in a few hundreds of rupees from time to time) by the UGC to the registrar of the university and from the registrar to the heads of the departments. The time taken for this is about three months. After this the head of the department obtains *pro forma* invoices for such equipment or apparatuses as can be obtained within the value sanctioned for his department. He must then send two copies of the import licence applications together with nine copies of a detailed list of the goods to the registrar who will scrutinize them and send them over to the UGC. The UGC will now send these applications to the Development Wing of the Ministry of Commerce and Industry for clearance from the 'indigenous angle' and to certify that the equipment is not manufactured in India. The papers are now returned to the UGC which sends them on to the Chief Controller of Imports and Exports in the Ministry of Commerce and Industry. If the licence is now issued, it begins its journey back through the UGC and the registrar to the head of the department.

However, in most cases the licence comes in an incomplete form as the original list of goods is misplaced or lost. The licence is, therefore, rendered void and you begin your correspondence again by sending new copies of the lists. Often the letter of authority in favour of the firm is missing. After the complete licence comes back, the agent of the desired firm may be contacted and orders placed for the equipment with the manufacturers abroad. By now, however, the manufacturers may have put out a new model or the prices have changed. If this happens, a long correspondence starts afresh.

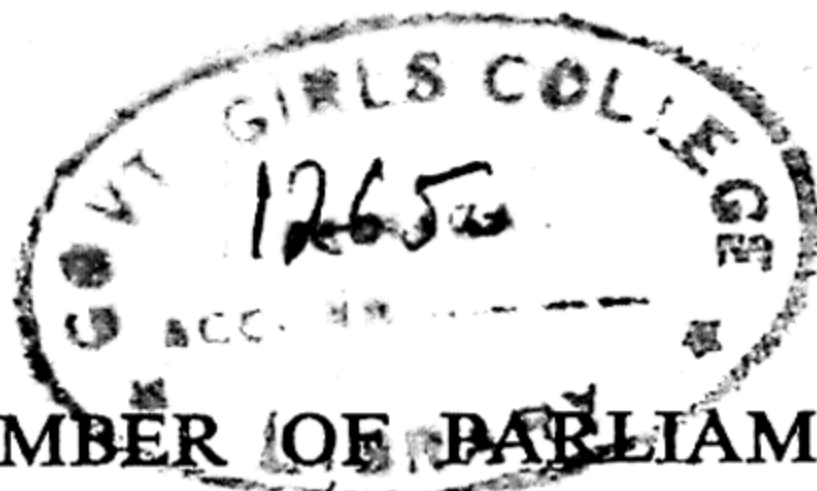
The ordeal is by no means over. The scientist has to enter into

a new correspondence through the normal stepwise channels with the Development Wing to issue a fresh 'Not Manufactured in India' certificate. This makes a mockery of the earlier clearance of the import licence applications from the 'indigenous angle'. More annoying still is the fact that the customs authorities are not satisfied with this certificate and applications have to be made to the Ministry of Education for a 'customs duty exemption certificate'. After a year's correspondence one may well find that while one ministry has given the necessary certificate the other refuses to do so. The duty has, therefore, to be paid and another year-long correspondence initiated for its refund.

By now the scientist may have given up all plans for research and may have taken another job, or returned to a foreign country!

Conclusion

. . . While our government spends a great deal more money on science than ever before and this is appreciated by all lovers of the country, that is not enough. The investment on science and on foreign exchange for scientific research must be greatly enhanced and greater consideration shown to the scientist himself than even to the laboratories and to the equipment, which are merely the tools for his research. We must extend our concepts of academic freedom. This means freedom to work, freedom to publish, freedom to go abroad to attend congresses and meet one's colleagues, freedom to buy instruments and literature, and freedom to do other academic jobs without being compelled by poverty into inactivity. . . . It will of course be our duty in return to do what we can to remove hunger, to increase the output of our farms and factories, and to win adequate recognition for our country in the world of science. I would appeal to all Indians who have taken jobs abroad to return to the place of their birth and to serve it even at a sacrifice. We have made sacrifices in the past; shall we not make similar and greater sacrifices in the future? It is true that science is international, but we are Indians first and everything else afterwards.



THE MEMBER OF PARLIAMENT, THE EXECUTIVE AND SCIENTIFIC POLICY

AUSTEN ALBU

I

WHEN THE business of government was concerned more with the making of laws than the administration of institutions, a Member of Parliament, a slightly better informed than average citizen could feel that he had most of the knowledge needed on which to make up his mind on the issues that he was called on to decide. Furthermore, in Britain the idea that the well-educated man without specialized training could administer any department of state attained general acceptance at a time when the state administered little and that little was understood on the basis of practical experience and deductive reasoning rather than scientific knowledge. Such technology as had to be considered in the decisions that were taken by governments and parliaments was largely empirical and capable of being understood by the non-expert legislator.

In this century the subjects with which government has to deal have become increasingly dependent on scientific research and development, and, in so far as one of the main functions of government is the allocation of scarce resources between alternative desirable uses, it is more and more occupied with judging between a large number of scientific or technological projects, some of which may be concerned with matters on the very frontiers of knowledge. In a world in which even scientists themselves often find difficulty in understanding the work of their colleagues in fields other than their own, it is not surprising that non-scientific politicians and administrators struggle helplessly to deal with their responsibilities for deciding policy and appropriating funds.

The machinery of government itself has become infinitely more complex as the technology of war has advanced and as representative democracies have required more and more activities by

the state to foster the welfare of ever-growing populations. To cope with the problems to which this has given rise there has developed, in place of the empirical attitudes and deductive reasoning of previous administrators, the belief that solutions should be based on systematically gathered quantitative estimates, arrived at and assessed by scientific methods. Thus, science enters into the affairs of government both as an object and instrument of policy and as a means of thinking about policy.

Although the collection of information as a basis for policy, through the medium of Royal Commissions or other agencies of inquiry, was the unique achievement of Britain—it was one of the great contributions of Benthamism to the machinery of British government—in the nineteenth century, the use of the scientific method to interpret such information has now gone much further in the United States. The career civil service, created in Britain in the second half of the nineteenth century, was staffed by men with a training in classics, mathematics or history and without special training in the field of their professional concern. In the United States, on the other hand, the Jacksonian revolution, by preventing the development of an elite administrative corps, cleared the way for experts with specialized training, including natural and social scientists, to become more intimately involved in the highest levels of government administration.¹ There has not, however, been a comparable development on the legislative side.

Professor Raymond Aron has identified three main types of problems which have to be resolved by governments, which hardly existed in the past and which are, in their different ways, 'scientific'. The first is the whole range of economic problems. The second is that of the choice of direction for scientific research. The third is that of those problems of defence and diplomacy, such as are involved in a test ban treaty, which can only be resolved with the advice of scientists.² The largest field of all in which science today plays a predominant part falls into Aron's second and third categories. In Britain and the United States it is in defence policy that the organization of scientific advice at the highest administrative

¹ Price, Don. K., 'The Scientific Establishment', *Science*, CXXXVI (1962), 3522, pp. 1099-1106.

² Aron, Raymond, 'The Education of the Citizen in Industrial Society', *Daedalus*, XCI (Spring, 1962), 2, pp. 249-263.

level has now been taken furthest.³ The recent establishment in Britain of a Defence Scientific Staff, headed by a Chief Scientist on a level with the Permanent Secretary of the Department, is an innovation which greatly strengthens the machinery by which government obtains scientific advice and information. It does nothing, however, to help Parliament in its critical and controlling functions.

II

The difficulties which face the administrator and the legislator are partly the result of the exponential rate of growth of scientific discovery and its application which we are now experiencing, and partly the result of the present day conviction that governments must make use of the powers which science renders available. In the past, the educated men from whom came the politicians who ruled Britain and those who wrote the United States Constitution could read and understand a large part of the scientific literature of their day. There was, in fact, a good deal of interest in scientific matters among such people during the seventeenth and eighteenth centuries and even among the aristocracy there were a number of scientific amateurs. Since that time science itself has become professionalized and increasingly departmentalized, so that the possibility of a single individual being able to comprehend more than a fraction of the existing stock of knowledge has disappeared. So also in the field of technology where the multiplication, for instance, of professional engineering specialization and the increasing dependence of technology on theoretical principles discovered by scientific research, have made more difficult the untrained understanding of the working of modern machines and processes.

Although scientific institutions had already been set up by governments on the Continent and in the United States, where Congress founded the National Academy of Sciences in 1863 and the Department of Agriculture was stimulated into research activities by legislation after the Civil War, it was not until 1900 that the first government research institution, the National Physical

³ *Central Organization for Defence*. Cmnd. 2097 (London: H.M. Stationery Office, 1963), pp. 14.

applied research and, from time to time, it also draws attention to deficiencies in the research programme of the government. It now has a manpower sub-committee and collects statistics on the demand for and supply of scientists and technologists and makes recommendations on technical education. By and large its recommendations are accepted by the government, although sometimes belatedly or inadequately.

The A.C.S.P. publishes a brief annual report on all these activities; this report is presented to Parliament. There is no regular method by which the Council can be interrogated by Members, although it would presumably be possible for its secretaries to be made to appear before the Select Committee on Estimates. The terms of reference of the latter Committee, however, would not enable it to conduct an inquiry other than into the administration of the Council.

The Atomic Energy Authority publishes an annual report on its civil activities and so does each of the research councils and the National Research Development Corporation. These are available to Members of Parliament. The reports of individual research stations are also available to Members of Parliament. A number of civil departments of government have, since the war, had scientific advisers and some have advisory councils to enable them to keep in touch with work going on in universities and other outside bodies. During the last few years a number of departments dealing with social policy have started their own small research groups. These include the Home Office, the Ministry of Education, the Ministry of Housing and Local Government and the Ministry of Public Works and Buildings. There is no provision for contact between these advisers and Parliament.

On the two-thirds of government research and development expenditure which is for defence purposes the Member of Parliament has to rely for official information on ministerial statements and the brief annual statements published by the Ministry of Defence and the Service departments. During the last few years the Service departments have organized visits for Members to see new weapons in use or development. The Atomic Energy Authority and the research councils have also made arrangements from time to time for Members to visit their establishments. Otherwise the Member of Parliament has no specific machinery at his dis-

Laboratory, was established in Britain. This was followed, thanks to the efforts of Lord Haldane, by the Chemical Research Department at Woolwich Arsenal, the first of the now extensive defence research establishments. Later came the civil research councils for medicine and agriculture and the Department of Scientific and Industrial Research, which was founded in 1916.⁴

Today all these organizations have expanded enormously the scale and range of their activities and a new giant, the Atomic Energy Authority, has grown up among them. There have also been set up the Nature Conservancy and the National Research Development Corporation. Furthermore, government support, with large sums of money, research and development in private industry. In 1961-62, out of a total expenditure on research and development in the United Kingdom of £634 million, government paid £385 million of which £177 million was spent in private industry.⁵

Parallel with this growth of government interest in scientific research, there has been a growth in the scientific advice available to Ministers and, to a lesser extent, in the reports presented to Parliament or made available to Members of Parliament on request. After the last war, an Advisory Council on Scientific Policy was established to advise the Lord President of the Council (now also Minister for Science) in the exercise of his responsibility for the formulation and execution of government civil scientific policy. This coincided with the setting up of the Defence Research Policy Committee to continue in peacetime the functions of the Scientific Advisory Committee to the War Cabinet. The Advisory Council on Scientific Policy consists of active scientific and technological administrators who meet once a month. It has the services of a very small staff in the Ministry for Science. Its capacity is therefore limited. It deals with specific matters referred to it by the Minister, such as the question of the extent to which Britain should undertake space research, as well as more general questions. It advises in very general terms on the appropriate balance both between different fields of research and between pure and

⁴ Tizard, Sir Henry, *Scientists in and out of the Civil Service*, Haldane Memorial Lecture (London: Birkbeck College, 1955).

⁵ *Annual Report of Advisory Council on Scientific Policy, 1961-62*. Cmnd. 1920 (London: H.M. Stationery Office, 1963), p. 50.

duct research into atomic energy and to produce fissionable material. Some Members undoubtedly had contacts with scientists engaged on this work or others who understood its significance. The step from fissionable material to an explosive weapon is not a long one and these Members, even if not actually informed of what was taking place, could surely have drawn their own conclusions. Nevertheless Parliament as a whole remained singularly uninterested; perhaps because the majority of Members were unaware of the significance of the steps which the government had announced. Not until the explosion of the H-bomb did research and development on atomic weapons become a live political issue.⁸

Since that time a number of decisions, not only in the defence field, have been taken on scientific and technological advice not available to Parliament. Some of these were the subject of severe criticism as they developed; for instance, the decisions to build the Blue Streak missile and to purchase Skybolt, both of which were subsequently abandoned. The development of the civil nuclear programme and the choice of nuclear reactors to be developed for ship propulsion have both been criticized, but the full details of the advice on which government decisions on them were made have never been published, nor has there been any opportunity, except briefly in the former case, during the hearings of the Select Committee on Nationalized Industries which examined the electricity supply industry, to examine any of the experts who contributed to that advice. Two matters on which, although a good deal of information has been provided by the Ministry of Health, Parliament could usefully have examined expert witnesses, were the fluoridation of water supplies and the control exercised on the manufacture of drugs, such as thalidomide. (The vulnerability of expert advice was demonstrated in the case of the effect of the American high level explosions on the Van Allen belt. In this case the Prime Minister had to admit that the information he had first given to the House, and which had been criticized by some scientists, had been wrong).

⁸ Crossman, R. H. S., Introduction to Bagehot, Walter, *The English Constitution* (London: Fontana Library, 1963). See also correspondence by Mr Crossman and the Rt. Hon. George Strauss in *The New Statesman*, 10, 17, 29 and 31 May, 1963.

posal to obtain further information on, or to criticize, the work of these organizations except the normal method of parliamentary question and debate. He can ask questions of the appropriate Minister, he can speak in Committee of Supply, on the adjournment of the House, on a special motion or, if appropriate, during the discussion of a Bill. He cannot compel a Minister to provide information if the Minister does not wish to do so. In the main those Members who are effective depend on what they can glean from their own, private sources.

The use of experts or expert committees to advise government has increased enormously the number of political decisions based on evidence not subject to informed public or parliamentary criticism. During wartime such methods are inevitable, although their dangers have been well delineated by Sir Charles Snow.⁶ The disclosure of the manner in which the committee which advised President Truman on the decision to drop the atomic bomb on Japan withheld from him minority opinions, including those of several distinguished physicists and of General Marshall, is a terrifying example of the power of expert committees who need only report their findings to a Minister or Ministers.⁷ Since the war, as Mr Richard Crossman, M.P., has pointed out, this trend has been strengthened in Britain by the growth of the power of the executive, and particularly of the Prime Minister, in Parliament. Whether or not the majority of the members of the Labour Cabinet of 1945 were aware of the decision to develop an atomic bomb, Parliament certainly was not, until it was casually informed by the reply to supplementary question in 1948. It is difficult to believe, however, that if Members had studied carefully the estimates for the Ministry of Supply and the Ministry of Works they could not have discovered that something was up. It is unlikely that all Members were unaware of what was taking place.

Parliament had been informed in 1945 of the setting up of the United Kingdom Advisory Committee on Atomic Energy under Sir John Anderson and of the steps that were being taken to con-

⁶ Snow, C. P., *Science and Government* (Oxford University Press, 1960) and *A Postscript to Science and Government* (Oxford University Press, 1962).

⁷ Knebel, Fletcher, and Bailey, Charles W., 'The Fight over the A-Bomb', *Look*, 13 August, 1963, pp. 19-23.

crease the expertize at the disposal of the administration and, unless changes were made in the way in which Members of Parliament obtained information, strengthen the immunity of government from informed parliamentary criticism on scientific matters.

It is not only in matters involving the natural sciences and technology, however, that parliamentary control is becoming progressively weaker. The establishment of the National Economic Development Council and the development of more scientific methods of controlling the economy, with the possibility of the use of mathematical models of the economy involving evaluation of alternative policies by means of computers, is another example of the growth of power of the executive advised by the expert at the expense of more traditional methods based on empiricism and political intuition. Just as the Gallup poll has added a determinative element to political judgement, so the use of social research methods in the hands of experts is tending to destroy the equality of the opinions of Parliament and the executive by providing a factual basis for those of the latter through systematic social surveys.

It is not, however, mainly the methods employed in carrying out these inquiries that have removed from Parliament some of the bases of informed criticism of the executive. After all, the conclusions to which they give rise are certainly simple enough for any educated person to understand. The important fact is that the reports themselves are rarely published, or made accessible to Members of Parliament.

There was considerable criticism in the House of Commons, before it rose for the summer recess in 1963, when it was discovered that the Ministry of Housing and Local Government had commissioned a survey of housing by the government's social survey organization in 1960 the conclusions of which were considered to be in contradiction to subsequent ministerial statements. This report was never published; it has been shown, under conditions of secrecy, to housing experts and research workers but not to Members of Parliament.

Whether or not the complexities of all this scientific information would be difficult for Members to understand or evaluate, there is no reason to believe that they would do worse than most members of the government. The truth is that, over a number of

In general it is unsuitable that the Prime Minister should attempt to give authoritative answers in the House of Commons to questions such as those concerned with the effects of bomb explosions on the atmosphere. He can only tell the House what he is advised by a scientific committee, the members of which may not agree among themselves and, in any case, there are no simple scientific answers to questions of this nature. In such cases, the average Member of Parliament would be better informed if he were able to read the evidence of a number of scientists subjected to examination by a parliamentary committee.

III

A number of recent developments in governmental organization in civil departments have widened the gap which already existed between the knowledge possessed by government and by Parliament. The choice of the next civil power reactor will be made on the advice of a coordinating committee set up under the auspices of the Cabinet Office, which is itself dependent on an appraisal of various kinds of reactor system being carried out by the Atomic Energy Authority and the Central Electricity Generating Board. Although the existence of this committee was reported by the Select Committee on Nationalized Industries and referred to in both Houses of Parliament, the Prime Minister refused to state its terms of reference, relying on the precedent which governs the rules of departmental committees.⁹ The decision on the choice of a nuclear reactor for ship propulsion is being taken on the advice of a departmental working group advised by a technical assessment panel. Information on their proceedings can only be obtained by a Member of Parliament who happens to know one of the members of these bodies and then only on an informal basis. Proposals for strengthening the Ministry for Science, which have been made by the Labour party and by a number of Conservative Members of Parliament, would, if carried out, undoubtedly in-

⁹ *The Electricity Supply Industry*. Report from the Select Committee on Nationalized Industries. H.C.P. 236-1. Session 1962-63. (London: H.M. Stationery Office, 1963), Vol. I, p. 125. *Hansard*, House of Commons (London: H.M. Stationery Office, 1963), Vol. 681, Column 1777. 25 July, 1963.

mittees heard claims for the construction of chronometers for the determination of longitude. In 1831 and 1834 committees were concerned with steam carriages and heard evidence from Richard Trevithick, Thomas Telford, Michael Faraday and John McAdam among others. They produced a favourable report but the dominant land-owning class prevented the reduction of the prohibitive tolls imposed on these vehicles and so hindered the development of the motor car in England. In 1809 a committee examined the effect of broad wagon wheels on turnpikes and produced a technical report illustrated by many drawings.

The coming of the first system of illumination from a central energy supply led to many committees on the gas industry. The first, in 1809, heard evidence from Sir Humphrey Davy, the Secretary for the Royal Society, and from a chemist who conducted experiments for the Committee on the Consumption of Coal for Gas Making. Further committees on the gas industry were set up in 1823, 1858 and 1859 and all heard scientific evidence.

Charles Babbage's invention of a mechanical computer was the subject of correspondence between the Treasury and the Royal Society which was presented to Parliament in 1823. Medical subjects, included an inquiry into the way bodies were obtained for dissection in schools of anatomy and improvements in the medical treatment of ophthalmia. Much engineering evidence was given to Select Committees on Private Bills promoted by canal and railway companies.

The famous Committee on Accidents in Coal-mines of 1835 heard evidence from Sir Goldsworthy Gurney, a doctor and the inventor of a steam road carriage, from George Stephenson and from George Birkbeck among many others. Its report ran to 360 pages and included an elaborate index and many diagrams.

The use of Select Committees continued during the nineteenth century, and they were occupied from time to time with matters involving scientific innovations. In 1858 and 1859 scientific evidence was given to a committee on the supply of gas in the metropolis. In 1879 a committee on lighting by electricity was chaired by Lyon Playfair, himself a scientist who played a prominent part in the campaign for technical education. Evidence was taken from outstanding electrical engineers, including two from France.

In this century the only committees which have taken much

scientific evidence were the Select Committees on the Telephone Service of 1921 and 1922 which took the unusual course of appointing a civil and electrical engineer as assessor to assist them. Most of their inquiries, however, concerned organization. In 1936 and 1937 there were two Joint Select Committees of both Houses which dealt with the methods of measuring and of charging for gas and these were, to some extent, involved with technical matters.

Today, Select Committees are rarely used to inquire into proposed legislation and the only regular committees for the examination of witnesses in the House of Commons are the Public Accounts Committee, the Select Committee on Estimates and the Select Committee on Nationalized Industries. All these committees are precluded by their orders of reference from examining ministerial policy, although in some of their reports, especially of the Nationalized Industries Committee, they have not found themselves able to distinguish administration from policy. Since the war they have all been involved in inquiries into departments or industries in which scientific and technical decisions play an important part. The Public Accounts Committee, for instance, has been concerned with the cost of defence research contracts and the methods of their control. It produced a critical report on the excessive costs of the Jodrell Bank radiotelescope. But all these were *post facto* inquiries into procedures, in which the method of taking technical decisions was not given much attention.

The Estimates Committee has, during recent years, examined the production and development engineering groups of the Atomic Energy Authority, the Department of Scientific and Industrial Research, naval research and development, the supply of military aircraft, meteorological services and the Royal Greenwich Observatory and the Ministry of Power, including its connections with the appropriate research associations. These inquiries, however, were concerned with administrative structure and efficiency and not with scientific or technical decisions which, as matters of policy, have been assumed to be outside its order of reference.

Although the recommendations of Select Committees are by no means generally accepted there is no doubt that their reports are taken seriously in the Departments and have some influence on administrative policy. This influence is a direct one and not

usually due to any great use of the reports by Members in debate.

The Select Committee on Nationalized Industries has, in its reports, investigated and reported on the adequacy of the research and training programmes of the industries. In its report on the air corporations, it went in some detail into the development and supply of new aircraft and into problems of aircraft maintenance. The Committee issued a warning that the pace of advances in aircraft design, associated with defence research programmes might lead to a panic rush to buy supersonic aircraft too early, which would be uneconomic. The report on British Railways was critical of the lack of research and of the inadequate attention paid to the recruitment and training of high level scientific and engineering staff. In its inquiry into the gas industry the Committee was faced with the conflict between the Gas Council and the National Coal Board on the former's proposal to import methane gas as a rawstock and its obvious scepticism about the economics of the Lurgi plant for coal gasification. Inevitably it heard a good deal of technical evidence and, in spite of initial hostility from some members of the Committee, it unanimously gave a cautious blessing to the proposal.

Apart from the Public Accounts Committee, which has the services of the Comptroller and Auditor-General, these committees do not have the assistance of expert staff. They are served by regular House of Commons clerks; although there is nothing to prevent them inviting experts to give evidence and they sometimes do so.

An almost unique body is the Parliamentary and Scientific Committee. It was formed in 1939 on the initiative of a small unofficial group of members who had interested themselves in scientific matters. Today its membership includes some 130 members of the House of Commons, about 60 members of the House of Lords and about 130 scientific and technical organizations. It remains an informal and unofficial body with the object of providing Members of Parliament with scientific information and of keeping its scientific members informed of parliamentary matters affecting their interests. It operates by holding monthly meetings when Parliament is in session, at which scientists or technologists report on their current activities. Once in session it is usually addressed by the Minister for Science. At these meetings the talks are followed

by questions and discussion. Visits to research establishments are also arranged. The Committee publishes an annual report and a regular bulletin on science in Parliament which can be purchased by anyone. It also offers a daily information service to organizations which are members.

There is no doubt that the Parliamentary and Scientific Committee has had a considerable influence in increasing parliamentary awareness of scientific problems. In the main, however, it has acted as a sort of lobby for science, by getting Members to advocate a larger role for scientists in government and greater expenditure on research and education.

From time to time the Committee sets up sub-committees on special subjects such as technical education, government-supported research associations or the rating (local taxation) of the premises of scientific societies. The reports of these committees are generally published and sometimes followed up by deputations to Ministers. They appear to have had a certain influence on government policy. Only a small proportion of the Committee's nominal membership, however, plays an active part in its proceedings. As an informal body it has no power to call on the executive for information or demand the presence of witnesses. Its financial resources are minimal and its secretariat is provided by a public relations firm.

Both the main political parties have, in the last few years, had science committees and scientific matters are sometimes discussed at other party committees, such as those concerned with defence, power and transport. Membership of these committees is open to any interested Member. Their influence on the government or on the leaders of the Opposition depends more on the political weight of their membership than on their specialized knowledge; although the latter will be called on by party leaders from time to time.

There are also a number of all-party groups, on a loose basis, largely set up with the help of industrial interests, which enable Members to obtain specialized information. There are groups of this kind concerned with roads, with space research and with ship-building. These groups do provide Members who are interested with information on current research and development in their fields; but, as they are supported by interested lobbies, this is hardly likely to be of an objective nature.

The number of debates on scientific matters has increased substantially in the last few years. Since the appointment of a Minister for Science there have been annual debates in Committee of Supply and also a number of adjournment debates on specific subjects. The organization of government support for science and the supply of scientific manpower and technical education have played central parts in these debates. The number of parliamentary questions has also grown greatly and covers today all the fields of scientific and industrial research, as well as education and the social sciences.

In the period from the resumption of sitting after Christmas 1962 until 11 April, 1963, 60 Members asked 109 questions on scientific and technological matters. Of these Members, five asked four or more questions and nearly half asked only one or two. Many of the questions dealt with medical problems which always have a strong emotional appeal. Others arose out of constituency interests; for instance where a research establishment was within a Member's constituency or where there was within it a dominant industry, especially agriculture. There were several questions dealing with different aspects of education.

In addition to these questions there were a number of references to scientific research in debates in the Commons and a number in the Lords.

Of those who asked these questions and took part in the debates only a very small number would have had any personal experience of science or technology. A few are directors of, or have other contacts with, industry. Naturally those Members, such as members of the Parliamentary and Scientific Committee, who are known to take an interest in scientific matters, have their own personal contacts with scientists and sometimes receive representations from them.

The scientists' trade unions, such as the Association of Scientific Workers and the Institution of Professional Civil Servants, provide some Members with minor material for questions and speeches. The discussions within the party committees and groups also provide material for questions and these are sometimes organized by the Opposition.

It is surprising that the interest in atomic energy developed slowly, although it was mentioned in the first Speech from the Throne

of the Labour government of 1945 and was dealt with by Winston Churchill somewhat gingerly in the subsequent debate. The first serious discussion took place in an adjournment debate opened by a young and erratic Labour Member in October 1945. He asked questions about the agreement with the United States and had obviously been well briefed by some scientists on the state of the problem in the United Kingdom. The explosion of a British bomb and the subsequent development of the H-bomb have naturally given rise to a large number of questions and references in debate, bearing chiefly on the atmospheric and genetic effects of the explosions and on the technical aspects of a test ban treaty. There have been few debates devoted to the broader aspects of the subject, the main ones being those associated with the introduction of the Bill setting up the Atomic Energy Authority in 1954 and with the amending Bill of 1959. The debate on the first Bill was mainly concerned with the advantages and disadvantages of transferring responsibility for atomic energy matters from the Ministry of Supply to the new authority. On the second Bill a small number of Members, in informed speeches, dealt with questions of scientific policy and the problem of government decisions among a number of competing projects.

The number of Members of Parliament taking an interest in scientific matters and the effectiveness of their interventions are dependent on the intellectual interests of individuals and the level of industriousness which they apply to those interests. There are probably not more than a dozen who take a continuing interest in matters of scientific policy. They include one Conservative ex-Minister of Supply and the one or two younger Members on each side of the House with a scientific or technological education. This is certainly a smaller number than are interested in defence, economic, social or educational questions. Those who are interested have their own contacts and sources of information, and they can generally keep themselves reasonably well informed if they are prepared to spend a good deal of their time doing so. For this purpose the resources of the parliamentary libraries are of little help. The reference section of the House of Commons Library has no member of the staff with a scientific qualification, and it is, in any case, too small to do much more than produce statistical or bibliographical information. Even in defence matters, however,

a small number of Members are sufficiently well-informed, through contacts with serving officers, or even by reading the specialized American journals, to be able to criticize government actions in some detail. They too, however, are inevitably unable to pierce the veil of security on advanced research and development projects in their early stages. It follows that their inability to quote official sources by chapter and verse for their criticisms, puts them in a weak position *vis-à-vis* Ministers.

Suggestions for a committee system on the American or continental model are not new; and they always come up against the argument that they would interfere with the tradition of Cabinet responsibility. Mr Bernard Crick revived these suggestions in an advanced form in a recent Fabian pamphlet. He advocated the formation of a number of specialized Standing Committees, both to consider departmental estimates and to examine proposed legislation. The Committees would have no legislative or executive authority, but would report their findings to the House.¹¹ More recently a number of Conservative M.P.s have made a suggestion for Standing Committees on economic matters and for the consideration of technical and scientific questions arising from unopposed government legislation. They recommend that such committees should consist of backbench Members with industrial or technical experience and should co-opt specialists to advise them.¹² Mr George Wigg, a Labour Member who has earned a reputation as an independent critic of defence policy, has recently placed a motion on the Order Paper calling for a Select Committee to examine the defence estimates and to report upon the effectiveness of the policy which they are designed to implement. This goes much further than any previous proposal and is an avowed attempt to take defence matters out of party politics. Mr Michael Ryle, a clerk in the House of Commons, has put forward a proposal for fact-finding committees to examine the implementation of government policy.¹³

¹¹ Crick, Bernard, *Reform of the Commons*, Fabian Tract 319 (London: Fabian Society, 1959).

¹² *Change or Decay*, by a group of Conservative Members of Parliament. C.P.C. 268 (London: Conservative Political Centre, 1963), p. 24.

¹³ Ryle, Michael, 'Greater Committee Scope for M.P.s', *The Times*, 17 April, 1963, p. 11.

IV

Obviously suggestions of this kind invite comparison with the methods of the United States Congress. Unfortunately, although a good deal has now been written on the control of scientific policy by the executive, it is difficult to find out what is the real effectiveness of Congressional Committees in the scientific field. There are a number of committees in both the Senate and the House of Representatives that deal with scientific matters, of which the most important are the Joint Committee on Atomic Energy, the Senate Committee on Aeronautical and Space Sciences and the House Committee on Science and Astronautics. These are the fields in which the most money is spent and which attract popular interest; but there is no committee concerned with the overall allocation of funds for research or for inquiring into the general directions of scientific policy.¹⁴ Very few Congressmen are scientifically trained, nor are the administrative staffs that serve them and their committees. On the other hand the Legislative Reference Service of the Library of Congress is equipped, although inadequately in the opinion of some, to produce background papers on scientific subjects.

The enormous sums which have been voted for defence and space research have left Congress frustrated by its inability to judge whether they are justified. The only committee which is considered a fit match for the executive in its task of scrutinizing requests for appropriations is the Joint Committee on Atomic Energy. The reasons for this may be that by law it must be 'currently and fully informed' by the Atomic Energy Commission and that it has the services of staff members with scientific and technical competence borrowed from the federal departments.¹⁵ In general Congress goes along with federal demands for the vast sums needed for projects which serve the popular ends of defence or national prestige; but makes life more difficult for administrators asking for relatively trivial sums for other scientific purposes.¹⁶

¹⁴ Since this article was written, the House has established a Committee to try to examine the whole range of government research and development activities—now costing \$13.7 billion a year.

¹⁵ *Science*, CXXXIX (1963), 3549, p. 26.

¹⁶ An example was the hearing on 25 February, 1963, before a sub-

Congressional Committees, in other words, reflect the pressures of politically potent groups—including scientists individually and through their organizations—when judging requests for money for scientific or technological research and development. Needless to say one or two specially informed or vigorous members can make all the difference to the effectiveness of a committee dealing with a specialized subject.

One major barrier to an effective relationship between science and Congress is the fact that only a tiny number of Congressmen have any scientific knowledge and the average Congressman rarely meets a scientist; in committee hearings it is generally the scientific administrator who appears as a witness. A number of attempts have been made in order to overcome this barrier.

The first active contact ever made in the United States between scientists and legislators took place during the preliminary discussions on the Atomic Energy Bill in 1945. Groups of young scientists from several laboratories gathered in Washington with the purpose of getting Congressmen to understand the implications of atomic energy. They provided classes for Senators for the organized study of elementary nuclear physics and chemistry. These were conducted by Dr Edward U. Condon,¹⁷ the well-known physicist.

Some years ago the House Science and Astronautics Committee established a panel of distinguished scientists which met members twice annually to discuss various problems involving government and science. Another attempt was made by the American Association for the Advancement of Science which joined with the Brookings Institution to sponsor a series of 'round-tables' to expose members of Congress to leading scientists.¹⁸

To some extent these activities were similar to the occasional educational activities of the British Parliamentary and Scientific Committee, and they might well be considered in Britain. Seminars which included politicians, scientists and civil servants might committee of the House Committee on Appropriations on the request of Mr J. Herbert Holloman, Assistant Secretary of Commerce for Science and Technology, U.S. Department of Commerce, for \$7,400,000 for civil industrial research. 88 Congress. 1 Sess. 1963, p. 747.

¹⁷ Hewlett, Richard E., and Anderson, Oscar E., Jr., *The New World 1939/1946. A History of the United States Atomic Energy Authority* (Pennsylvania State University Press, 1962), Vol. I, p. 449.

¹⁸ *Science*, CXXXIX (1963), 3549, p. 26.

be a useful means of increasing mutual understanding; but without additional parliamentary machinery this could only make a small improvement in the performance of a few Members of Parliament in their daily function of questioning and criticizing Ministers. Valuable though the parliamentary question is, it needs some background of scientific understanding on the part of both Member and Minister if it is not to become merely trivial or partisan.¹⁹

Whatever steps are taken to ensure that Members of Parliament are not scientifically illiterate, they will need greatly improved resources of research and information to do their jobs properly. Although there are still Members who claim themselves satisfied with the present library service and who cling to the gentlemanly view of the Member of Parliament as a sagacious amateur, there is a growing demand, especially among the younger Members, for a properly equipped research and information service, staffed with men and women educated in a broad range of subjects, including the scientific and technological.

Any comparison of proposals for the greater use of committees in the British Parliament with the procedure in the United States Congress must be finally vitiated by the completely differing constitutional systems. Congress is a constituent part of government; Parliament is not. Congress initiates legislation which in Britain is almost entirely the function of government; the expert preparation of Bills is no longer a parliamentary responsibility. By tradition Parliament votes the Supply asked for by government, without detailed consideration of the Estimates, provided the policy which they are to support is approved. None of these considerations would prevent Parliament using the device of the Select Committee to inform itself on scientific matters either generally or in special cases and there is no doubt, from the experience of the Estimates and Nationalized Industries Committees, that a committee of this sort would work in a non-partisan spirit and produce valuable reports. What prevents the development of a committee system, even with these limited objectives, is the degree to which even non-political decisions have become matters of high policy which are taken by the Prime Minister or one of a small

¹⁹ It has been suggested that this is a problem that might well be worthwhile for the professional scientific and technological institutions to consider. *Nature*, CXCVIII (1963), 4878, p. 322.

number of Cabinet colleagues. The growth of party discipline during the last century has given to the Cabinet, and within the Cabinet to the Prime Minister, a practically unshakeable power in Parliament between elections.²⁰ Parliament, by allowing this development to take place, has given up the power, in face of the opposition of the government majority, to decide for itself what committees to set up. It is true that once a committee has established itself by tradition over a number of years it would be extremely difficult for a government to oppose its reappointment; but unless a government were willing to share some of its responsibilities for decision making in scientific matters with Parliament, or at least to allow Parliament to learn from the government's own advisers the opinions on which its decisions were based, it would not make a move to set up any new committees for these purposes.

V

Mr Don K. Price has suggested that science, by making public policy so much more complex, has destroyed the idea that public issues could be determined by the parliamentary opposition of two opposing doctrines.²¹ In his view the range of free scientific and political development is today dependent on the encouragement of social experiment based on scientific initiative and this requires some degree of freedom from party dogma or administrative traditions which is obviously easier in the United States with its non-ideological parties and more fluid civil service. The American system, which encourages the continuous interchange of men and ideas between the government and universities, makes it impossible to maintain an institutional distinction between ends and means, between policy decisions and scientific research or administration.

Dean Price's view greatly overestimates the extent to which the scientific method can supplant the traditional parliamentary methods of resolving conflicts of values in political life. Although it is certainly true that the application of science to fields which are the subject of public policy changes the loci of political dis-

²⁰ Crossman, R. H. S., *op. cit.*, p. 51.

²¹ Price, Don K., *op. cit.*

agreement, it does not remove the necessity for political choice. As Alvin M. Weinberg has pointed out the criteria for scientific choice are both internal and external. While the internal criteria may be generated within the scientific field itself, the external criteria involve judgements on the social merits of policies. These are political matters. Even in matters of scientific policy, the criteria for decision come from without rather than from within the scientific disciplines involved.²² How much more true must this be where the policy is not one regarding the development of pure science but of applied science and technology.

The choice between spending more money on nuclear physics, space science, or biological research or between the development of a supersonic jet aircraft or the search for a cure for cancer is one to which a scientist can only contribute by an estimate of the effects of a particular decision. A government must consider the advantages to society as a whole of the choice which it is forced, for economic reasons, to make.

Whether or not the American system has led to a better method for taking decisions on scientific or technological matters by government or for a better control by the legislature of scientific policy, there is nothing to prevent Congress, if it were so minded, from improving its own arrangements. By contrast, if Parliament is to get powers, even to improve its means of obtaining information, there will need to be a softening of party discipline and an acceptance of the view that, on the growing number of matters which in no way involve party opinion, the confidence of the government should not be involved. Informed criticism and even amendment of technical decisions or legislation should not be considered as defeats requiring the government's resignation. Without such possibilities of affecting decisions, the present apathy of many Members of Parliament in face of complex issues will not be overcome.

Cabinet government has great advantages over the congressional system in the task of coordinating policy and administration and nowhere more so than in the complex and often urgent matters of economic, defence and foreign policy. The establishment of a number of Select Committees, with the sole object of obtaining

²² Weinberg, Alvin M., 'Criteria for Scientific Choice', *Minerva*, I (Winter, 1963), 2, pp. 159-171.

information on the background for policy, would in no way interfere with Cabinet responsibility for political decisions. The growing danger is that the scientist, working behind the shield of the executive, will imperceptibly take over from the electors and their representatives the power of making choices between policies based on alternative values or interests, simply because those policies involve, in one way or another, scientific knowledge. Even governments themselves will find themselves more and more at the mercy of their scientific experts if they prevent the scientific information and advice at their disposal from being exposed to parliamentary and public criticism. The report of a Select Committee does not only inform Parliament; it informs the wider public outside. In this, it performs one of the most vital duties of parliamentary question and debate, without which a democratic system of government will hardly survive.

The reform of parliamentary procedure lies, in the last resort, in the hands of individual Members. If a sufficient number of them were to break out of the vicious circle of a growth in executive power, a tradition of withholding information from Parliament, the lack of research services for Members of Parliament and apathy of the latter in the face of the resultant parliamentary situation, no government would be able to resist.

The establishment of a number of Select Committees, charged with the duty of informing Parliament on the scientific component in government decisions, even if supported by greatly improved research and information resources for members, would not, however, as the American experience has shown, remove altogether the growing danger of dominion by scientific advisers and civil servants. To this danger there is no immediate and complete answer. Over time, however, the growing pervasiveness of science in our life and culture should be self-correcting. As more and more people receive at least a partially scientific education, and if the machinery of Parliament is made more vigorous and efficient, it is likely that the composition of Parliament itself will change in the direction of a larger proportion of Members with some scientific or technological background. In this way the views of the experts might become subject to more informed criticism and their power subject to more consistent control. The very process which has engendered the present difficulty might contribute

to its cure. It will do so, however, only if some Members of Parliament, supported by enlightened opinion, take an effective initiative in freeing Members from their present domination by the executive.

TECHNICAL ASSISTANCE AND FUNDAMENTAL RESEARCH IN UNDERDEVELOPED COUNTRIES

MICHAEL J. MORAVCSIK

I

TECHNICAL assistance programmes to the developing countries have been in existence for some years now and they are carried out on a considerable scale. A large majority of such programmes consist of applied research and development in connection with a specific problem, such as the survey and the proposal for the solution of the salinity and waterlogging problems in Pakistan. In such programmes, 'experts' on the particular problem are selected to evaluate the situation and design the solution, and then financial assistance is given to the country involved to carry out the recommendations in cooperation with or under the supervision of the 'experts'. Engineers, applied scientists, legal experts, administrators, expert farmers, industrial managers, etc., are the chief participants in such undertakings. These programmes are usually of fairly short range (meaning that they affect only the next two or three five-year plans) and can produce strikingly tangible results, which contribute to the well-being of the country involved.

Another kind of assistance is concerned with education. Considerable American foreign aid funds are spent in various countries for elementary school building, on demonstration equipment in various colleges, or even on school milk programmes (which, by promising a cup of milk to the student, reduce absenteeism in schools in some cases to a surprisingly large extent). Furthermore, the Fulbright and Smith-Mundt programmes send college and university teachers to various countries to raise the level of instruction and to supplement teaching staffs which are often deficient in number as well as in quality.

There is, however, another aspect of technical assistance which

so far has been neglected, which is of major importance to the developing countries and which could be undertaken with a minimum expenditure of funds and a certain amount of cooperation by the scientific communities of the United States or other countries with technical aid programmes. This is fundamental scientific research in the underdeveloped countries. By fundamental research I mean investigations undertaken in the natural sciences for the purpose of enlarging the general body of knowledge and not because the results to be obtained appear to be helpful in solving a specific practical problem. (Fundamental research in this sense is also sometimes called pure science, as opposed to applied science).

II

It is not at all obvious that the underdeveloped countries are badly in need of fundamental scientific research today, at this very rudimentary stage of their development. Yet, the need for this kind of research is basic to the argument proposed in this article. If one travels in any of these countries and observes the high rate of illiteracy, the daily struggle to reach the bare subsistence level and the snail's pace at which the modernization of the social structure moves, one might gain the impression that what these countries need is intense assistance to solve the most urgent economic and administrative problems and that pure research is an unjustifiable luxury. A somewhat more searching investigation will however support the contention that the underdeveloped countries must begin without delay to develop their scientific resources in the direction of fundamental research.

It is of course seldom questioned that applied research is of great importance to the underdeveloped countries even today. There is a great deal of applied research which is done in the advanced countries and which produces results which are relevant to the problems of the less developed countries. This would appear to reduce the urgency of doing even applied research in the underdeveloped countries; after all, what they must do, it could be argued, is to import and apply the results of the research done in the advanced countries. Yet, by its very nature, applied research often tends to be specialized, and conversely, particular

problems require separate efforts by applied research workers. It inevitably happens, therefore, that each country finds itself faced with certain problems which must be dealt with scientifically but which are peculiar to it, perhaps because, of the climate, the fauna, the natural resources, the economy, the cultural heritage or the geographical location. No advanced country can then be expected to deal with these problems and only a well trained and competent local research team will have the time and inclination to do this.

The education of such a well trained and strongly motivated body of applied scientists can be carried out only by people who are intimately acquainted with the frontiers of science in the fundamental fields and who are active research workers themselves. This is so because the fundamental science of today is the applied science of tomorrow and because the educational process in science is a long process. One or two examples should suffice to illustrate this point. It would have been proper, for instance, in the late 1930s, to include in the education of an engineer a rather thorough course in the then somewhat esoteric subject of nuclear physics, since this would have prepared these engineers to face, 10 or 15 years later, at the peak of their careers, the major developments in nuclear engineering connected with reactors. Experience has shown that it is very difficult for an already established scientist or technologist to interrupt his career to train himself in a fundamental branch of science which he missed when he was a student. Similarly, an electronic engineer receiving his training in the 1940s would have been well advised to learn a considerable amount of solid state physics, to prepare for the development of transistor technology in the 1950s.

That this point is not at all an academic one can be concretely illustrated. In most underdeveloped countries the few institutions of higher learning which exist are staffed with a large proportion of the very few local scientists or engineers who are available. Many of the more senior of these received their training in the thirties or forties at some foreign university, perhaps did some routine piece of work for a thesis, and then returned to the homeland, to be appointed to a post at a university or college. With no research being pursued there, with no competition from colleagues and in the general atmosphere in which time and change

were of no great concern, they settled down to teaching the science of 1938 throughout the 1940s and 1950s, and now the 1960s. The concentration on the teaching of undergraduates accentuates this tendency to persist in the scientific ways of their own student days. By now, they have a vested interest in opposing any change in the curriculum, in the teaching methods or even in the administrative practices of the university, and since they are in senior positions, they act as a very strong barrier indeed to any modernization of the institutions of higher learning. It is a very vivid example of what might be called scientific 'featherbedding', and it is strongly self-perpetuating inasmuch as the science students of today, who thus learn at best the sciences of yesterday, will get little of the excitement of being in the forefront of the sciences, will be badly prepared for a productive scientific career and hence will be mostly concerned with trying to secure for themselves the few comfortable old-fashioned academic positions which become available at the universities as the older generations disappear. To obtain these positions, they do not have to show great brilliance or present lists of research publications, but instead have to exhibit a willingness not to rock the boat and to fit in with the old-fashioned ways which these institutions have followed for the past decades. Almost all the universities on the Indian subcontinent suffer from this malady. The situation is somewhat different in the newer universities of Africa and South-East Asia but, for closely related reasons, very similar conditions obtain. With active research being pursued at these institutions, such a process of intellectual calcification could not possibly have come about and where it has not yet occurred it can still be avoided. If active and fundamental research is not carried on in these universities, this calcification will become or remain as firm as it already is in the older universities of the 'third world'.

III

The second argument in favour of basic scientific research in underdeveloped countries is also linked with the applied work done there; it asserts that applied work can be carried out successfully only if the research workers have constant access to persons working in fundamental fields. There are several reasons for

this. The training of a person working in fundamental research tends to be more thorough and broader than that of persons who committed themselves early in their careers to applied work. This is particularly true for scientific personnel in underdeveloped countries, where applied research is often defined in the narrowest possible sense of the word. For instance, a basic research worker usually has a better background in general research methods, in the understanding of the interconnection of various applied problems through their common scientific basis and in the general techniques applicable in various branches of science. Thus, a person trained in fundamental research can often serve as an 'ideas man' to his colleague trained in applied research, suggesting new approaches to a problem, or carrying over analogous methods or solutions from fields unfamiliar to the workers in applied research.

Such an interplay between fundamental and applied research is an essential ingredient in the advanced countries, so much so that perhaps we take it for granted that such opportunities exist in all countries. A very large fraction of research workers in the fundamental fields in the United States spend part of their time as consultants to applied projects for the government or private industry. They serve either as members of review committees, which survey progress made in a given applied field, and suggest new directions, new approaches and techniques, or, they might be called upon to help in connection with a specific applied problem which has run into difficulties and where a broader scientific base is helpful in getting it back on the right track. The results of such cooperation between applied and pure research workers are obviously very valuable and consultants of this kind are, therefore, in great demand and consultant's fees very high.

My point is simply that this assistance in carrying out applied research should also be available to the underdeveloped countries. In fact the need there is even greater since, once an applied team runs into difficulties, the closest colleagues who might come to the rescue may be thousands of miles and large amounts of foreign exchange away. Hence day-to-day cooperation is out of the question and even a single trip for the purpose of consultation might run into financial and political obstacles. The only remedy is to establish highly competent and active local research teams

in the fundamental sciences. They can then be used as consultants in times of such 'crises'.

I V

The third argument supporting pure research is not related to applied work but stands on its own merit. Granting that eventually all countries should have their own basic scientific life it will still take a very long time—perhaps several scientific generations—to establish a strong tradition of pure research in a country which has previously been without science. It should therefore be part of the planning of a new country to make, in addition to five-year economic plans, a 25-year scientific plan. This would allow for the training of young scientists today in the fundamental fields, who then, years from now, with considerable experience and some notable achievements behind them, will originate and direct research carried out by a new generation of local scientists. These, having been brought up in an indigenous research atmosphere, will be able to expand their own research efforts and in turn lead another scientific generation which will then be large and strong enough to carry out, on an extensive scale, research which will be competitive with work in the advanced countries.

There are several examples demonstrating that even in relatively advanced countries, the development of a scientific tradition of excellence is a slow process. It took even communist Russia, building on an already outstanding and established scientific tradition and on the scientific institutions of Czarist Russia, about 40 years to become a major scientific nation. As for the United States, it took a tremendous influx of European scientists, coupled with the scientifically extremely stimulating atmosphere of the war years, plus 20 years, to transform American physics from a minor and sporadic effort into world leadership. When we are faced with the meagre resources and considerable cultural handicaps of an underdeveloped country, such a process should be expected to take even longer. It is therefore of utmost importance to start it as soon as possible, even if on a modest scale.

V

The fourth point in connection with research in the less developed countries concerns the training of administrators. In the new states there is a tremendous need for competent and well-trained administrators to decide on the right policy for development and to carry out those decisions according to plan. This lack of local administrators has been cited as the largest single handicap of the entire foreign aid programme of the United States. Among these administrators, many have to make decisions which deal with scientific and technological matters such as health projects, new industrial processes, improved agricultural methods, development of power resources and many others. The need is very great therefore, for persons sufficiently well versed in science and technology to be able to make technically sound, realistic and prompt decisions. The best training for such posts is research experience and a thorough education in the fundamental sciences. This contention is borne out by the example of the United States where the administrative heads of the large government and private research and development projects are increasingly scientists with research background in some fundamental branch of science. It should be kept in mind that especially in the case of a new country, where everything starts from a low level, where decisions affecting the country for several decades have to be made, and where furthermore the number of persons making the decisions is very small, the stakes are extremely high and a few mistakes might make the difference between success and failure. It should also be remembered that because of the shortage of scientific manpower these administrators in the young countries have no advisory committees to rely on for technical advice, as is the practice in the advanced countries, and they have no one to turn to for aid in making these decisions. It is of the highest importance, therefore, that these people get as broad an education in the various fundamental sciences as is possible and that they come to understand the ethos of science through their own experience in research. The respective Chairman of the Atomic Energy Commissions of India and Pakistan, Dr. Bhabha and Dr. Usmani, might serve as individual examples of this contention.

VI

The fifth argument for fundamental research is a psychological one; achievements in the fundamental sciences would serve as a source of great encouragement and high morale in the newly developing countries. Justly or not, pure science is generally considered one of the most sublime proving grounds for the human mind and a country, which economically, socially and politically might still have to consider itself inferior to its Western counterparts, might take special pride in the outstanding achievement of one of its sons in the natural sciences. In a small country like Denmark, the late Niels Bohr is a national hero and one could encounter a taxi driver in Lahore, perhaps illiterate, who speaks with reverence of Professor Abdus Salam, the most eminent Pakistani physicist. More importantly, such outstanding individuals also serve as models for young local scientists, who are trained under less than ideal conditions, or who, after having been abroad, have to face the agonizing decision of whether to return to their backward homeland or succumb to the many tempting offers of employment in the advanced countries. In making this decision and in gathering strength for hard work once they decide to return home, the example of outstanding local achievements in the fundamental sciences plays a crucial role. One cannot overemphasize the importance of high morale when talking about the development of backward countries. It may be the most important single factor in deciding between success and failure.

VII

In the foregoing arguments on behalf of fundamental research in underdeveloped countries, I have assumed at several points that the advanced education of scientists in a country should be carried out to a large extent on their home soil. The reasons for this are as follows:

Firstly, most of these developing countries have chronic shortages of foreign exchange and education abroad uses a lot of foreign currency. Reliance on fellowships can be only on a small scale; when hundreds of scientists have to be trained each year, it is impossible to find enough outside financial help. It is much

more economical, even apart from its other benefits, to establish an institution of higher learning on home soil.

Secondly, Western institutions of higher learning are becoming more and more overtaxed by demands for admission of their own nationals, so that even if a candidate from an underdeveloped country is treated on an equal footing with his Western colleague (which, for a number of reasons, might not be the case), he has a good chance of being turned down. This situation will only be aggravated in the coming years with the rising demand for higher education in the West.

Thirdly, it is very difficult indeed to establish functioning research groups when people get their education in different university systems abroad, when the assimilation of new staff workers cannot be done at an early stage and when continuity of personnel is lacking. It has been a long-standing experience in all advanced countries that the best and cheapest hands in the gruelling work of scientific research is the postgraduate student who is responsible for a very large proportion of the many man-hours involved in scientific experiments. At the same time, the student himself learns, at an early stage, about the problems peculiar to the equipment he uses, about the sources of supply for spare parts, about the peculiarities of the supporting technicians, etc. All in all, a 'school' thus develops around a senior scientific person and this school can turn out to be extremely productive indeed. It should be the goal of an underdeveloped country to establish such schools on home soil in the various branches of the sciences and such schools cannot prosper without young students, especially postgraduate students.

Fourthly, living abroad during the advanced training and then returning home raises a number of problems of adjustment. For one thing, some trainees have been known to be unable to produce anything like their best in the Western countries because the problems they faced when trying to make an adjustment to the different economic, social and cultural practices were so overwhelming that their scientific studies were neglected. Others managed to adjust but in the process lost some of their sense of identity with their homeland and when the time came to return, they let themselves be lured away by the attractions of the research institutions of the countries in which they received their advanced

training. In fact, the problem of how to encourage young Ph.D.s to return to their country of origin is one of the most serious in trying to develop science in a new state. The 'mortality rate' is very high indeed and affects adversely the whole programme of advanced scientific training and research. Few governments would fail to grumble about spending foreign exchange to send their sons abroad only to be snatched away by the richer countries. These problems of adjustment and readjustment are really extraneous to science and hence should be eliminated if at all possible by establishing advanced institutions on home soil.

VIII

Let us now see in what way a technical assistance programme can be used to promote basic scientific activities in these countries. The three important ingredients in such activities are buildings, equipment and manpower.

The first of these, buildings, is the least difficult. Most of the young countries are well prepared, eager and willing to put up sumptuous edifices to house their research activities. There are several reasons for this. Firstly, buildings usually do not involve spending foreign exchange. To be sure, foreign architects are often engaged to make the designs but even some of these are willing to accept local currency and the architect's fee is a small fraction of the total cost anyway. The construction itself is done by a local firm, often not without faults or even corruption, but at least for the first few years the new building will serve as an imposing exhibit of the country's will to become 'up to date'. And this is the second reason for the willingness to provide buildings: it is an obvious and eye-catching sign of 'progress', which can be used for impressing foreign visitors and for domestic propaganda. Only an expert, and only after a thorough investigation, can tell whether the work carried out in the building is high grade or not; the majority of the onlookers will judge the enterprise by its external manifestations, of which the building is the most evident one. The attractive buildings of universities in Mexico, Pakistan, or some of the West African countries may serve as examples.

The third reason why it is relatively easy to get buildings is that the financing of a building is a matter for a single decision,

which might be made by the government in a burst of enthusiasm. Once built, it requires little further expenditure for maintenance. This is also one of the reasons why experimental apparatus, to be listed under the second ingredient, equipment, is relatively easy to get. Although this nearly always requires foreign exchange there are many advanced countries very willing and well prepared to donate it as part of foreign aid. This again has the advantage of looking impressive and in addition helping the industry of the donor country which produces the equipment. It also appears to have the advantage of involving only a single decision, although in reality this is not so. In fact, expert maintenance of such equipment is a major problem in the underdeveloped countries since the shortage of trained mechanics and technicians is even greater than the shortage of scientists and spare parts must also come from abroad. For this reason impressive equipment often stands idle for want of a very inexpensive replacement item or because nobody in the institution knows enough about the apparatus to find out what is wrong with it.

There are two immediate and easy remedies for this malady. The first would be a ready supply of spare parts in the country where the equipment is located. For instance, a storeroom could be set up which would carry all the spare parts needed for the equipment donated to all institutions in that country. Secondly, a system of roving Western mechanics could be organized until local ones have been trained. For example, one electronic technician would be assigned to Pakistan; he would constantly tour the universities, institutions, hospitals, etc. where equipment donated by the foreign government is located and could repair faulty equipment and give advice for the proper use of the apparatus. Considering the high cost of some of the electronic equipment, the cost of maintenance of this one technician would produce handsome returns in the increased efficiency of the apparatus.

The development of library facilities is another element to include in the category of equipment. This has at present a much less favoured position than experimental equipment, although it is hardly less important. Buying scientific books and periodicals requires foreign exchange and in fact, in large amounts, over a long period of time. Scientific libraries are generally not objects of national pride, being buried in one room of the upper-floor of

the building, and a layman generally has little basis for distinguishing a good library from a bad one. There has been several attempts made to facilitate the building up of libraries in these countries. Some books published in the United States appear in cheap 'Asian editions'. There are some organizations, particularly the British Council, the Asia Foundation, and the United States Information Service, which occasionally donate subscriptions to periodicals, at least for a limited amount of time. But this is just a piecemeal solution on a small scale. The United States government should consider publishing all American scientific journals in cheap editions, which, aided by government subsidy, would be available to the underdeveloped countries either free or in exchange for local currency. At least one library in each city where considerable scientific activity is evident, should be well stocked with books, journals and research papers in temporary form, such as duplicated reports, so-called 'preprints', conference proceedings, etc. One of the greatest handicaps of a scientist working in an underdeveloped country is the feeling of isolation and this could be relieved by a prompt and ample flow of scientific information. (Other countries with technical assistance programmes could also help by supplying scientific information along the same lines).

The most serious problems of science in an underdeveloped country are, however, those connected with the supply and maintenance of manpower of high quality. I have already discussed some of the problems in connection with giving advanced scientific education to promising students and touched on the difficulty of luring back trained personnel from abroad. Once promising young scientists return to their homeland, they are faced with further problems, such as delays in obtaining experimental equipment and problems in maintaining it, inadequate library and other information facilities, lack of contact with their colleagues in the more advanced countries, shortage of stimulating local colleagues working in the same field with whom to discuss problems, low salaries, too many routine duties, etc. These are problems which arise from national poverty, small numbers of trained personnel, faulty traditions and uncongenial administrative practices.

IX

Clearly, many of these problems have to be tackled one by one and in the context of the local conditions. In addition, however, there is also a general remedy, which might be supplied within technical assistance programmes, and this I wish to discuss in greater detail. Life in the fundamental branches of science would be greatly stimulated if active research workers from advanced countries would be willing to visit research institutes in the developing countries for a stay of, say, one year, to cooperate with the local workers in their research and organizational activities.

What would such scientists bring to an underdeveloped institution that is unique and valuable?

First, they would bring up-to-date scientific methods, information on the latest developments and up-to-date ideas. The isolation of institutes in the young countries could be greatly reduced by the wealth of information infused by the presence of persons who have lived in the most stimulating environment of one of the great Western centres of research. Such visitors' programmes are essential even for those Western research establishments which are slightly outside the mainstream of activities. They are thus even more vital in those institutions whose only contact with the latest developments of contemporary science would otherwise be through the printed page.

Secondly, one of the striking characteristics of the scientific life of the underdeveloped countries is the fact that the personnel which counts, as far as modern research is concerned, consists mostly of quite young persons. This is to be expected because higher education in most of these countries, particularly in the natural sciences, is very recent. The consequence of this is, however, that there is a crying need for originators of research, for 'ideas men', for those who can stimulate and guide the young Ph.D.s until they have acquired enough experience themselves to carry out independent research. Only a very small fraction of new Ph.D.s are sufficiently brilliant and original to be able, immediately after receiving their degree, to originate research problems or lead a research team. In advanced countries this does not pose a problem, since these young people in effect get a long post-Ph.D. training as junior members of some research team or

academic staff. In an underdeveloped country, where at present such teams and staff do not exist, a research worker from a leading university or research institute in a scientifically advanced country with some experience in generating research problems and in leading research, could do wonders in making effective use of local talent which otherwise might lapse into aimless stagnation.

Thirdly, a Western research worker, even if he has no special interest or experience in scientific organization, is likely to have acquired unwittingly the knowledge of how an advanced research institution functions. Such tacit knowledge is badly needed in the underdeveloped countries. To be sure, some of the local scientists themselves have received their advanced scientific education at a Western research institution. Their adjustment problems, however, as well as their position as foreign guests, usually prevent them from learning much about the organization of the institute in which they are being trained. Their task is to do well in their professional studies and they consider their mission a success if this specific aim is fulfilled. There is, hence, a great need in the young research establishments in the underdeveloped countries for advice on matters of curriculum, library practices, training, organization of seminars, store and workshop rules, etc. A particularly important aspect of this in which a Western scientist can be of great help is the attraction of short-term visitors, persons who happen to pass through the area and are willing to visit for a few days, conduct a seminar or two, and talk to staff members about their problems. Travel for scientists in the Western countries is recognized as imperative and an increasing number of scientists are going beyond the California-Moscow circuit and visiting countries in Africa, South Asia and Japan. Usually only a very small additional amount of money is needed, in local currency, to persuade the visitor to make a small detour and visit a given institution. But the contact must be made by somebody who knows (through the scientific grapevine) that the visitor is coming and who knows him well enough to invite him. A Western scientist, particularly if he has very extensive personal contacts, is invaluable in this respect.

In addition to these rather tangible benefits, the Western visitor represents, much beyond his role as a scientist, a note of encour-

agement, a stimulus to morale, a symbol of recognition, which is of extreme importance. In luring back young trainees from abroad, the assurance that visitors from the advanced countries will be joining them might be a decisive factor. A Western visitor can also enlarge the research group which otherwise would be too small to function properly. Finally, the visiting scientist from an eminent institution will be a symbol that the institution in question has 'arrived', that it is, in some sense, on an equal footing with its foreign counterparts as a member of the world scientific community, that it has established a strong link with the international brotherhood of scientists. The feeling of elation over this development and the high morale generated by it will compensate for many of the physical shortcomings of the research establishment and will give strength to the local scientists for the hard work facing them.

X

Thus far, this form of technical assistance, namely, the sending of research scientists for prolonged sojourns to an underdeveloped country has hardly been explored at all. The problem as such has not received adequate recognition. But even when the problem is recognized, the task will still remain more difficult to organize than the sending of equipment or the building of a dam, since it involves a large group of scientists and technologists, who will have to be convinced that the programme is valuable and they will also have to be convinced that they can assist in it without undue personal sacrifice. It requires convincing the research scientist in the United States and in other countries with technical assistance programmes, working at a national laboratory, university, or private firm, that he should transfer his own work to a remote country, at least for a year, where he might have to spend some of his time getting adjusted, or serving as an adviser to the local scientists, and where consequently his efficiency as a research worker might suffer. With some advanced planning, however, and by choosing the appropriate time for the visit in relation to the career of the visitors, such a temporary adventure might be not only not detrimental but in fact beneficial to the visitor, even from the purely scientific point of view. His year abroad might be spent

catching up with broader developments in his field, with devising plans for future work, with writing a book, or just with getting a new perspective on the problems with which he has been confronted in his daily routine at home.

Channels of financial help for such an undertaking are at the present very meagre, at least compared to those available for educational projects (Fulbright, Smith-Mundt, etc.) or for technical cooperation (AID, Point Four, Colombo Plan). It would be a great help if special fellowship could be set up for this purpose, perhaps by the National Science Foundation in the United States and corresponding bodies in other countries, so that an interested scientist would not have to take on himself the responsibility for seeking financial support. Two hundred such fellowship annually, costing say, \$25,000 each, would only amount to \$5,000,000 a year, or a fraction of 1 per cent of what is now spent on technical aid. Yet, 200 scientists abroad distributed over 50 underdeveloped countries which are ready to benefit from the programme outlined, would make a tremendous impact indeed on fundamental research all over the world and would in the long run pay a very great return in the form of the scientific results obtained from the institutions and the countries to which they go.

REPORT ON TRAINING FACILITIES AT THE TECHNICIAN LEVEL IN SOUTH AND SOUTH-EAST ASIA¹

IT HAS been repeatedly pointed out that effective scientific and technological research and teaching are impeded in the new states of Asia and Africa because they are hampered by the shortage of competent technicians. The Survey of the situation in the 21 South and South-East Asian countries associated with the Colombo Plan, deals primarily with the shortage of technicians in industry; its conclusions may, however, be accepted as no less applicable to the conduct of research and the training of research workers.

I

It is one of the great deficiencies of the application of science through engineering and technology in South and South-East Asia that there is such a great shortage of technicians and such inadequate institutional facilities for their training. The reasons for this lie, in part, in the attitude of industrialists and businessmen who are indifferent towards the use of scientific research and scientifically based technology in their enterprises or in the economic systems of their countries. The small-scale and familial nature of many industrial enterprises in South and South-East Asia has disposed them to apathy or scepticism about the value of scientific or technical training.

At the other extreme is the attitude of the technical educationists who are convinced that there are important tasks for those who have mastered these skills. Thus there is a tendency for institutions to train their pupils to a higher technical standard than is actually required. Many institutions, secretly or openly, aspire to university status, although there is already adequate emphasis on

¹ Report of a Survey financed by the Ford Foundation. Director of Survey, H. R. Mills. (Colombo: Colombo Plan Bureau, 1961), p. 245.

the training of professional engineers and technologists but inadequate provision for the training of technicians. A degree course becomes the standard towards which all young people with a modicum of ambition aspire. Colleges for the training of technicians are often staffed with degree holders in engineering who have no industrial experience; they tend to teach a diluted type of degree course based on what they themselves have been taught and they fail to give their pupils the practical outlook and understanding of particular tasks in the light of general scientific, engineering and technological principles.

There is a serious lack of coordination between technical education and industry. Technical training in some countries 'seems to have been planned by education departments without serious reference to the needs of industry in the hope that the trainees will eventually be absorbed into industry, even where the industry scarcely exists or has its own known methods of recruitment. The products of many institutional types of training do not find ready acceptance in private industry or in government departments. . . . There are apathetic industrialists who themselves have little or no scientific education and who are suspicious of the products of educational institutions, particularly technical colleges, and fail to see their real or potential value. . . .²

'In one of the larger polytechnics of the region, it was found that the principal had had no official, or even personal contact with the manager or authorities of a large industrial firm about half a mile away. The official attitude seemed to be that the job of the polytechnic was to follow a syllabus and award diplomas and it was the trainees' responsibility to find a job.

'There is evidence of a great shortage of good teachers of technical subjects and of the unsatisfactory state of the teaching profession generally. For some countries, according to a recent survey, nearly 70 per cent of the ordinary teachers in many of the

² 'The students in technical colleges are naturally keen to obtain a certificate or diploma; but while government departments have rigid rules for recruitment, and specify minimum paper qualifications for each grade, industry attaches little importance to technical institutional certificates, and this difference in attitude towards paper qualifications will continue until industry can be persuaded that a certificate from a technical college is a certificate of competence which guarantees that a man can do things and that he has had some experience.' *Ibid.*, p. 33.

schools did not possess the required qualifications for teaching at the level for which they were recruited.

'The fact that the curricula of many of the technical schools and colleges were laying too much stress on the acquisition of theoretical knowledge and not enough on the practical application of the knowledge, was largely attributable to the lack of practical qualifications of the teachers. . . . They therefore tend to create men in their own image.

'This again is related to a government's insistence on paper qualifications in academic subjects, for teaching purposes. The solution of this problem is not easy as it would be extremely difficult to find men with practical experience already engaged in industry who would have sufficient educational background to be able to impart their skills and knowledge at the technician level to boys from secondary schools who are aspiring to be technicians. If such suitably qualified people were in existence, they would probably be able to command better salaries in industry than could be offered by an education department of the government, for technical training in an institution.'

What is really needed is a training which will enable the technicians to understand the ideas of technologists and to interpret these to skilled and semi-skilled workers under them. Training courses, of whatever kind, which are intended to meet the needs of technicians, must be different from those primarily designed for craftsmen on the one hand or scientifically trained engineers and technologists on the other.

Without competent technicians, the isolation of professional engineers and technologists at the top of the hierarchy from craftsmen at the bottom cannot be overcome. The gap between these two classes is more than a matter of large differences in remuneration or even of status. It is, above all, a fundamental gap in communication. The supply of semi-skilled and unskilled labour in South and South-East Asia is very large and there is a reasonable number of craftsmen whose traditional skills can be adapted to industrial conditions. It is adequate supervision that is lacking.

Graduate engineers and technologists are unable to supply this kind of supervision and guidance, partly as a result of linguistic difficulties as they are usually trained in English. It is their professional language. Although many of the terms used by crafts-

men are in English, their use of the language is limited in scope and they are likely to misunderstand instructions given in English. A good technician, quite apart from his own mechanical skills, will know sufficient of his subject, of the English language and of the vernacular language of the craftsmen to be an effective channel of communication. The skill of the technician is thus especially crucial in South and South-East Asia in translating into practical operations the applied science of the engineer and technologist.

The disinclination of industry in South and South-East Asia to concern itself with the problem of sufficient use of technicians and, therefore, the problem of providing adequate training facilities for them, is part of a more general pattern of disparagement of the value of applied science and technology.

Indifference or aversion towards formal technical training is shared by potential employees and prospective employers. 'Practically every boy who leaves a secondary school with a school leaving certificate aspires to enter a university . . . the 'dignity of labour' is frequently preached but rarely practised. . . . Many secondary school leavers automatically migrate towards the white collar occupations without any regard for their fitness, aptitude or ability, or perhaps to a training college . . . to escape doing technician's work and to get into a job at a desk in a government department.' In technical colleges, the staff as well as the students often seem reluctant to accept the responsibilities they have undertaken. 'Only on rare occasions was it found that workshop instructors were in overalls.' 'In many technical education institutes visited, there were classes of trainees at technical college level in their ordinary clothes, clean white shirts, silk ties often dangerously dangling over their work, and many of the students wearing their college blazers, complete with embroidered badge. The workshop supervisors in such classes were also inappropriately dressed. The trainees appeared to be devoting half their attention to their work, the other half to keeping themselves clean and their labour very dignified. Of all the workshops visited, only two or three attached to technical colleges insisted upon overalls (or a local khaki shirt or apron).'

'In a large steelworks visited, one of the main tasks for the training officer was to break down social prejudice against manual

work and the wearing of overalls by his diploma holders and graduate apprentices.'

The great social distinction between the *educated* and the *uneducated* is an important factor in the short supply of technicians in South and South-East Asia. In consequence of this, it is often useless 'to take a boy with a reasonably good education, perhaps qualifying for admission to a university, but not obviously cut out to be a professional engineer, give him a course of two or three years of a sub-professional type in a technical institution, and classify him as a technician . . . he will generally be reluctant to identify himself with . . . the work on the shop floor. He will frequently hanker after a professional type of job, a desk and an office.' It seems better in this situation to select a boy 'with a very elementary education who is already employed in the works on the shop floor and who shows ability, keen interest and intelligence. This boy . . . if given opportunities for technical education, would become in due course a far more useful technician than the other type.'

Another factor which impedes the growth of a *cadre* of technicians is the very great poverty of the classes from which suitable boys would come. The importance of the meagre wages which might be earned by such boys were they employed, instead of spending their time being trained, is a serious obstacle to their entry on training courses. The fact that the completion of a technical course confers very little of the social status which the more conventional type of academic education offers in the region, aggravates the problem.

II

'In South and South-East Asia there are many signs that the attitudes of the past generation are also slowly changing. The technician gap is being bridged by a more liberal approach from both sides. The keen, intelligent but poorly educated craftsman is being better cared for and is being given opportunities for acquiring a basic technical knowledge of his machines and materials, whether on the job, at the firm's training scheme or in an evening institute. He has, in the larger and well-run firms at least, a way to advancement leading to technician's responsibilities and status. This is a

satisfactory approach as it gives a man a feeling that he is cared for and that his efforts are recognized, and, having been a skilled craftsman, he will be respected and accepted by the skilled workers.'

III

A sound teacher training programme has a 'multiplier effect'. One person who is well trained and effective as a teacher will produce many more who, in turn, will train others.

The report recommends the organization of centres for the training of technical teachers. These should be primarily regional. Two good institutions already exist in Karachi and Kharagpur. In both places it is difficult to retain good teachers because the best people are offered so much better prospects in industry.

The report also recommends the use of correspondence courses, training films and television programmes, in order to make up the shortage in the supply of persons qualified to train technicians.³

³ In addition to this general analysis of the deficiencies of South and South-East Asia, the report contains a detailed survey of the facilities available in each of the 21 countries for the training of technicians. It provides details about training opportunities for each major branch of industry and agriculture. There is also a statistical summary of the training places offered and filled, arranged according to supplying and receiving countries from 1950 to 1961, and, finally, a list of individual training institutions specifying the courses offered, the duration of the course, the kind of certificate or diploma offered, the requirements for admission and whether it provides a hostel for its pupils.

HIGHER EDUCATION, PROFESSIONAL MANPOWER AND THE STATE

REFLECTIONS ON *EDUCATION AND PROFESSIONAL EMPLOYMENT IN THE U.S.S.R.*¹

ALEXANDER KING

I

AN educational system must be assessed, in some measure at least, by its contribution to the performance of the tasks undertaken by the society in which it exists or, to put it more precisely, by its contribution to the performance of the tasks undertaken by the elite of that society. This is particularly true of Russian education which, in idiom and asserted intent, is alleged to be utterly different from that of the West, just as it is alleged that Soviet and Western societies are utterly different from each other. Marx declared that education in a communist society should be a combination of academic learning and productive labour. Lenin conceived of education as an instrument to be used by the communist party in the construction of a socialist society. Education today in the Soviet Union is regarded as indispensable, equally and simultaneously, to the propagation of the Marxist-Leninist ideology and to the material well-being of the society which is asserted to depend on the observance of that ideology. The Soviet ideology of higher education aims at maintaining a doctrinal uniformity within the educated class of Soviet society, and encourages research and advanced study as immediate instruments of policy. Its basic aim is to strengthen the state; it does not claim to enrich the life of the individual who must subordinate his will and ambitions to the

¹ DeWitt, Nicholas, *Education and Professional Employment in the U.S.S.R.* (Washington: U.S. Government Printing Office for the National Science Foundation, 1961), pp. xxxix + 856.

common good, as it is interpreted by the communist elite.

Yet, higher education and training for the professions in any advanced industrial society have their own exigencies which do not permit themselves to be greatly distorted by ideologies. Despite the rigidity of the ideologies enunciated by political leaders and by rhetoricians, the political elite of a country, despite its asseverations of ideological observance, has also to attend to the realities of the situations it confronts. If it sets tasks for itself—such tasks as industrialization and modernization—then these tasks have their own necessities about which ideologies do not necessarily have much to say. The management of a complex economy based on a scientific technology and the administration of a society which has to operate such an economy present problems and elicit responses which are, to a large extent, neutral *vis-à-vis* doctrines and ideologies. The manner of adjustment of Soviet higher education to these imperatives of any modern society provides an incentive to us to reflect on the problems which we ourselves, in the non-communist West, face in adapting our own inherited patterns of higher education to the realities of our own society. It is particularly the similarity of the Soviet communist and the Western non-communist aspiration to promote economic progress through the practice of a rigorously scientific technology which leads us to perceive some of the identities and the differences of the higher educational systems of these two types of society.

II

The success of Soviet higher educational policy has been dramatic. The triumphs of Soviet science in scientific research, in the technology of nuclear energy and in the exploration of outer space have been visible for all to see. The technological sophistication of certain aspects of Soviet industry is likewise a testimonial to Soviet scientific and engineering education, and the gradual emergence of a better standard of living likewise testifies to it.

The two aims of Soviet higher education—the inculcation of a political and social ideology and the training of personnel for an advanced society and economy undergoing rapid industrialization in a time of exceptional technological innovation—are not always

in harmony. While the former always has some influence on the latter, the strongly functional trends of education demanded by economic realities are often not acknowledged or legitimated by ideological dogma.

May there not be a parallel here with this situation in the West, perhaps seen the other way round? The Western practice of higher education does not, it is true, purport to be guided by a systematic ideology. Education in a free society is generally presumed to be determined by the needs of the individual and not by the state; it is designed to maximize the potentialities of each individual, and thus, by enriching his spirit and disciplining his powers, produce a whole man who will, as an individual, exert his influence on society and culture and have a voice in the conduct of government. In practice, however, much of higher education is basically vocational. Instead of the various courses of study and professional possibilities being fully determined by governments, as in communist states, there is a wider variety of possibilities which are provided by autonomous universities and which can be chosen or rejected by the individual guiding himself by considerations of intellectual curiosity and career prospects, and by the operation of the labour market. His own personal development and social advancement, as well as his intellectual drive, will contribute to the individual's choice. There is greater flexibility and probably a much greater element of choice for the individual in a Western society than in Russia where quota systems, eroded to some extent by influence and 'old boy' network, replace the control imposed by inequality in the distribution of income and higher educational opportunity in Western Europe and America. Nonetheless, the vocational intention in much of our Western higher education is real. Not only the motives of the students in choosing certain courses, but the intentions of academic administrators in providing such courses of study are in varying degrees practical and vocational.

The main practical difference within the schools is that in Russia, from the early stage to the highest, much strictly vocational training as well as professional education is undertaken, and all of the syllabus is justified, ideologically, by reference to the needs of building and sustaining the future communist state. The maintenance and development of cultural tradition, the provision for

the creative life of the individual scientist or scholar scarcely figures alongside the claims of economic development and ideological conformity.²

It would seem therefore that, both in the East and the West, the greater part of the educational system is devoted to the preparation of individuals of the greatest possible use to the economy, and conducive to prosperity as a result of their productive effectiveness. This is achieved by more obvious direction in the communist countries, and by career and social incentives in capitalist communities. In both cases, although less willingly admitted by the West, the state, through its financial mechanisms, controls the extent and, to some degree, the direction of the educational process. A major difference, is, however, that in Europe and North America, the state machine is subject to the influence of public opinion through democratic processes; in Russia it is determined by a single political party seeking to regulate every detail in terms of a monolithic doctrine.

III

Higher education in Russia is regarded essentially as a higher professional training. There is a complete absence of general liberal education, although specialized humanistic scholarship is often of a high order and specialized higher training in music, ballet and the arts is of outstanding quality.

There is a tremendous demand for higher education among

² Nonetheless, despite its ideological insistence on equal educational opportunity, and on social and economic goals of rather a mundane sort, the Soviet Union faces the problem of ensuring the emergence of an intellectual elite without appearing to confer any degree of privilege. This is obviously a response impelled by a sense of the long-term needs of Soviet culture, but one which must either be introduced quietly, so as to attract little attention, or else attended by heavy doctrinal justification. By one of these happy suspensions of relentless Marxist logic, schools have long existed for children with special aptitudes in music, ballet and the arts. It is true that the success of the products of these schools in enhancing national prestige could easily justify them, but in fact such motives are probably not dominant in the decision to maintain them. The nurture of an elite of pure scientists and of the practitioners of certain humanistic disciplines is likewise a feature of the Soviet cultural policy which does not have a logically necessary position in Marxist-Leninist ideology.

individual Soviet citizens for their individual economic betterment, their social advancement as individuals, as well as in response to a very widespread individual intellectual interest. The extent of the opportunities offered to these aspirations is determined, of course, by the needs of the plan. Decision is made as to estimated requirements for doctors, engineers and specialists of all kinds, and, accordingly, quotas are drawn up to regulate admission to the various fields of study. These are filled on a basis of merit against a uniform list of rules and requirements. Students are not drafted or indirectly compelled to enter any specific field or study, but apply to institutions of their own choice, acceptance or rejection depending on past academic and vocational achievements, their success in passing a stiff entrance examination and a satisfactory political conformity. Entry to higher education is strongly competitive, at present about one secondary school graduate in three being successful. Once in the university, a large proportion of students successfully complete their courses and there is little evidence that success rates are 'adjusted' to the specific needs of the economy by altering the height of the examination hurdle.

In 1959, out of some 600 full-time institutions of higher learning in Russia, there were 40 universities. The rest are specialized 'institutes' of higher learning, devoted to training in particular fields such as engineering, education and medicine at a technical level, definitely equal to that of the university. The universities offer somewhat broader training and a much wider variety of subjects, largely natural sciences, social sciences and the humanities. Likewise university teaching is somewhat more theoretical and less applied, while the institutes provide the strictly practical professional education required for specialized jobs in industry, agriculture, teaching, commerce, etc. Graduation from either form of institution can lead to post-graduate work and research.

I V

The Russian segregation of higher education into different categories of institutions has great interest for the West. After all, a very high proportion of European and North American university teaching is as professionally orientated if not so narrowly

conceived as that of Russia. Medical and engineering schools, law faculties, and very much of the teaching of the natural sciences and technology have strictly vocational intention, and students are attracted in terms of the career possibilities and fashions of the moment. Still more obviously trained for a particular vocation are the considerable proportion of graduates from American business schools. It is thus accepted that higher professional training is a major function of the university and the one which concerns the great majority of students. Yet this does not prevent the university from practising true and free scholarship or from extending by research the frontiers of knowledge. With the very large increase in the numbers seeking higher education, however, there is an undoubted tendency in many places to lower academic standards, a more utilitarian approach, less genuine scientific and scholarly research and less time for members of the teaching staff to undertake research. Indeed the question may be asked as to whether the university is automatically and exclusively the appropriate place for all higher instruction. When only one per cent of the population is able, for social and economic reasons, to enter university, the standard academic traditions offer the only sure way and it is from this small proportion that the higher level of officials, teachers and research workers, who alone can guarantee the future, must come. But some 20 per cent of the population in the relevant age-classes demand a higher education, and posts other than the traditional elite positions must be filled by persons having something like a university education. The traditional university standards of intellectual performance become diluted and indeed the university is not necessarily the exclusive provider of such instruction. In the United States this problem has been solved in practice, although for other reasons, through a great variation in the level and content of university teaching, from the great universities, private and public, down to the intellectually less impressive institutions, still capable of imparting useful professional knowledge. In Europe, however, there has been a serious and on the whole successful attempt to maintain the uniformity of university standards which has made quick expansion necessarily difficult and vocational education at times too academic for strictly practical needs. An interesting attempt is being made in Yugoslavia, through an experimental three-cycle

university system, to provide three separate categories of graduates, the first cycle providing a plentiful supply of people with sound vocational education for professional and technical positions in the economy, the second the higher managers, engineers, economists, etc., and the third the elite, who have a thorough academic training which will enable them to do the creative work in science, scholarship and teaching on which progress depends.

Unlike Great Britain and more like the United States, in the U.S.S.R. post-graduate work and research have a special place and lead to positions of high status and remuneration. There is no doubt that Soviet scientists and other research specialists have a very high intellectual motivation and possess a spirit of genuine scientific inquiry. The doctoral degree is awarded by a central state accrediting body, in a manner nearer to the European than the American, by the public defence of a thesis or published research reports. Frequently doctorates are awarded on the basis of work done after an academic appointment rather than being a prerequisite to entry to the faculty. In theory the same control by the state and the 'needs' of the economy exists on the post-graduate level as on the lower levels of education. Value to the economy is still a basic criterion. A very great deal of applied research is undertaken and this has indeed increased since the reform. Nevertheless there appears to be a great deal of freedom at this level for the professor to follow the direction of his own genius through free choice of research topics. Cases of doctrinaire interference with the conduct of research are notorious but appear to be rare exceptions. Either the elite of Soviet learning is sufficiently powerful and intelligent to maintain its freedom and independence or else the government is sufficiently aware that the highest economic yields of all come from fundamental research in directions which are unpredictable, and scarcely subject to direction and control, which must injure rather than aid it. The continued survival of such conditions must surely depend on mutual respect and some degree of mutual understanding between the scientists and scholars on the one hand and the executive powers on the other.

v

The idea of a planned and directed economy which requires predetermined numbers of workers at all levels, possessing certain technical or professional skills, produced by earlier plans, has for long been regarded as repugnant to societies which prefer the system of free enterprise. Yet with the growing complexities of the modern technological society, it is gradually being conceded in our liberal societies that complete absence of any planning whatsoever will lead to trouble. Capitalist societies have gradually introduced elements of planning of the economy.

Among the industrialized societies of the West, we have seen the successful establishment of a certain type of planning system in France. The Swedish approach to a labour market policy, closely connected with the changing nature of the economy, is another instance. Corresponding trends are visible in education. In France, for example, demographic changes, technological advance and an increasing demand in economic life for the services of educated persons are leading to radical modification of the educational structure. For example, fourteen colleges of science and seven colleges of arts have been set up recently to relieve the pressure on the already too large University of Paris. These are mainly restricted to the preparation for short-term (two year) diplomas, specially created. Many traditions of the French educational system are being questioned in relation to their suitability to meet contemporary needs, and in the engineering schools, for instance, openings are now provided, much as in Russia, to candidates from workshops and factories. Corresponding changes are taking place in other countries, for example in the Netherlands, where the decision to intensify industrialization has led to the creation of new types of higher educational institutions in the form of technological universities.

One very important change in our attitude towards higher education, consonant with the newer macro-economic conceptions, is the gradual acceptance of the concept of national financing of education as an investment, rather than merely as a charge for social service or a cultural expenditure. This has come from the recognition of the importance of both education and research as dynamic factors in economic growth and development. This rela-

tionship is conceived in no narrow or technocratic sense, nor does it deny the need for education as a means of maintaining and enriching the cultural quality of the society. In this newer Western view, education is inevitably a long-term process; its importance as a vital part of economic progress necessitates its consideration as an essential ingredient of any long-term plans for economic growth. It calls for a commitment of national resources as necessary as investment in factory buildings or machinery.

This newer point of view has found its fullest expression in a conference held by OECD in Washington in 1962,³ which considered future educational requirements on the basis of predictions of population trends, prospective economic growth and social objectives.

A similar effort to plan educational development is nearing completion in Greece, Italy, Portugal, Spain, Turkey and Yugoslavia. These countries are collaborating in the Mediterranean Regional Project, which is attempting to decide on future educational investment in these countries by assessing in a systematic way demands which will arise from a predicted development rate of the economy and taking into account social, demographic and other elements. These reports will give a basis for ministerial decision on the magnitude and direction of educational expenditures and, in most cases, the exercise is expected to give rise to permanent planning machinery in Ministries of Education. The promise of this approach is arousing interest in similar studies in the more industrialized countries, and was endorsed by a Conference of the European Ministers of Education, meeting in Rome in October 1962.

From the above, it will be seen that the free-enterprise countries are re-examining many of their attitudes to education. The intricate relationship between the supply of highly trained persons and economic development is beginning to be perceived, albeit still very vaguely. Nothing coercive is involved in this conception of planning for the future supply of highly trained persons. Yet the attempt to estimate future needs—economic and social—and to make financial and institutional provision for the satisfaction of those needs is a type of planning. It is undoctrinaire; it does

³ *Policy Conference on Economic Growth and Investment in Education* (Paris: OECD, 1962), Vols. I-V.

not purport to be part of a cosmic outlook, but it is, nonetheless, an effort to make the economy, social policy and higher education articulate with each other.

V I

The 1958 reform of Soviet education, not yet fully implemented, will have important consequences in the Soviet Union and runs counter to trends in the West. Undoubtedly, stress on productive work experience from an early age, and narrow technical specialization will produce the numbers and skills required by the plan of the moment. In the highly industrialized countries of Europe and North America, perhaps because of their longer technological traditions and more stable labour force, the stress is on adaptability rather than on specialization of skills. Technological innovation rates are very high and will be raised still further as a result of the present expansion of research activity throughout the world, as well as by political measures of economic integration between countries. This means rapid change, not only in the pattern of industry, but in the technical processes and products within each separate sector, including progressive automation and a continual change in the nature of work. These tendencies are already very marked and they make great demands on the individual, whether research engineer or skilled workman. They also account for the present rapid obsolescence of knowledge and skills, slowly and painfully acquired, and for the new concept of education as a process which continues throughout the individual's career and for the institution of refresher courses of all types. We are but at the beginning of this era of continuous education which is likely to become commonplace within a few decades and which will depend on the concern of each individual for his own development. Very probably, too, employers will have to accept at least part of the financial burden beyond their immediate interest in the adaptation of the individual within the scope of the changing needs of the single firm. This will be easily afforded by the increased productivity brought in by new techniques and there will be time available as a result of shorter hours due to automation. As yet, however, there has been little repercussion of these changes on the basic nature of education at its

initial, formal phase. If a man must adapt himself throughout life to a rapidly developing body of knowledge and new techniques, his initial education must be deepened, less specialized and less immediately vocational. He must be taught at this stage how to learn and helped to acquire essential knowledge of a fundamental character difficult to absorb later, but without which it will be impossible for him to keep up to date.

These educational changes, resulting from technical and economic changes, are of immediate concern to any modern government, under whatever ideology or moral outlook it operates. The relationships among science, education and economic advancement are becoming so clear to politicians that we must expect increasing preoccupation by all governments with such matters. If wisely conceived, however, educational development, even if it has to be justified to Ministers of Finance in economic terms will offer great possibilities for the improvement of the quality of the cultured and moral individual.

It is to be hoped, however, that an enlightened society will accept the principle that, at the level of scholarship and academic research, only freedom from state interference can sustain creativity and thus, paradoxically, serve the highest interests of society.

In all these developments, the university is obviously the key institution and there is a danger that it will be stifled by its entwinement in the elaborate machinery of governmental planning. This is not, however, inevitable. A more articulate awareness of the need for freedom from state interference as the condition for creativity in science, thought and scholarship, can contribute to the protection of that autonomy. Soviet doctrine makes no provision for that autonomy and, whereas in various important fields of research, such autonomy is pragmatically recognized, it is as a realistic concession to the pressure of intellectual tradition and the awareness of practical advantages owing therefrom rather than as an affirmation of an intrinsic good. The exigencies of modern economic development do generate identities, but they do not eradicate all differences, and this, for the time being, in practice as well as in theory, still prevents the convergence of the two systems.

APPENDIX

ON THE IMPROVEMENT OF INDIAN
HIGHER EDUCATION

EDWARD SHILS

I

Introduction

THE INDIAN UNIVERSITY scene strikes the sympathetic outsider by a paradoxical juxtaposition of strain and slackness. It is a situation in which few men or boys can be called happy. Many of the teachers and administrators labour under the strain of many demands which they cannot fulfil, many conflicts which they cannot resolve. The students seem anxious and distracted; the frequency of acts of indiscipline testifies to the restless dissatisfaction of the students and the pressure of intense emotions to find expression.

Yet over large stretches of the academic and in much of what is essential in higher education, i.e., in teaching, study, and research, there is a pronounced slackness. Little is demanded and little is given in the quality of performance. Teachers teach listlessly, the students attend to them listlessly, research is carried out and reported in a listless manner. Many of the students study very little for most of their academic careers; when they do work hard they seem to do it without interest in what they are doing, and without curiosity or reflection about it. Many of the teachers lecture in an uninterested and uninteresting way; they often teach from old notes and out-of-date books. The subjects on which they lecture do not involve their intellectual passions. The teachers in the colleges and only to a lesser extent in the universities are a depressed lot. They feel disesteemed by others and they have little esteem for themselves. It is not that they do not regard education as a very worthy subject but that they think that they do not do it effectively. For the most part, they regard their own institutions and the higher educational system of which it is a part as failing in their obligations. They do not take their students seriously and they do not take themselves seriously. This despondency shows itself in their teaching and in their research; most of them do not do research at all and much of what is done is without spirit or substance.

There is relatively little enthusiasm for learning or discovery among either students or teachers. Neither side by its response arouses the other

to more strenuous exertion. On both sides the standard generally observed is one of routine and reluctant dutifulness. Sometimes it seems as if only conflicts about non-intellectual things are able to produce the electrical atmosphere which should properly be associated with the excitement of discovery of new truths or the perception for the first time of old truths.

Why does such a situation prevail throughout much of Indian undergraduate education in arts and sciences, and in a great deal of postgraduate and professional training as well? Why is so little in the way of interest and knowledge demanded of the students by their teachers, why do students and teachers demand so little of themselves or of each other? Why are talents and capacities which undoubtedly exist so little stretched by any urgent desire to do better? It is not that there is self-satisfaction about the present situation. It is widely known—at least among teachers—that what they are doing does not conform to a high standard. That indeed is one of the reasons for their depression. Many of the teachers recall an ideal which they once had of a right academic existence, and which they know they do not observe. Nonetheless, even those who recall that ideal find it hard to return to it.

The important question is why is there so little active, urgent desire to do a better job, to teach better, to study better, to do better research, to know more, and why in consequence the results are so ungratifying. The causes are numerous and they are so interconnected in a complex chain of vicious circles that it is difficult to know where to begin, either in the description of the facts or in a prescription of the crucial measures which can break the circles and begin an upward spiral of improvement.

II

Some Present Difficulties

I shall begin with a cursory description of the relevant facts. They are generally well known and acknowledged. The students are ill-prepared by their secondary schools for work at the level of higher education. They come increasingly from families with little education, and their studies receive little intellectual support from their background; their vocabularies are limited; their capacity for assiduous application to their studies is untrained. They have had little experience of independent study; they have learnt by unthinking memorization and their curiosity has not been encouraged. Many are beset by anxieties about financial matters. They receive little personal attention or solicitude from their elders; from their teachers they receive little or no individual supervision or supervision in small groups in their studies. The facilities for study in libraries and laboratories in most colleges—which provide for the majority of the students—are often poor; too little space to work, too few books, too scarce equipment. Much of their study is confined to undistinguished textbooks—many of them years out-of-date. They are asked to read very little which might quicken their imaginations or arouse an enthusiastic and hopeful

curiosity. They have never acquired a propensity for independent thought and in their course of studies they are given little opportunity for the use of their own judgment. They have come to believe that, throughout most of their university course, they acquit themselves of their responsibilities by attending many lectures. When they are not listening to lectures, they idle away their time. They study concentratedly, or rather cram, only in the few months before examinations, anxiously committing to memory things they scarcely understand. They seldom discuss intellectual problems with their teachers or with students more advanced than themselves.

Their difficulties of understanding are very greatly compounded by having to listen to lectures in English which many of them scarcely understand—both because of their own deficient knowledge of English and often because their teachers lecture to them in an English which would be difficult even for persons of much better knowledge of English to understand. In some institutions and courses they receive their instruction in an Indian language, and in that case their studies are handicapped by inadequate textbooks and the scarcity of supplementary literature in that language. In some instances of instruction in an Indian medium, they are still required to read textbooks in English and then they find that the tasks of comprehension are even more strenuous. So much so that they are as ill at ease in their studies as they would be if the medium were English. An intermediate point in the variety of media of instruction is a mixture of mother tongue and English, as a result of which the amount of matter communicated, which is seldom large, is reduced by half. An accompaniment of the two latter modes of instruction is a deterioration of English, even as a "library language", and a consequent shrinkage of the intellectual domain to which they have access.

Since their teachers are usually uninterested in them as persons and even as students, the students respond to teachers and to studies with an equal uninterestedness and an intermittently violent hostility. In addition to all these distractions from a properly intellectual existence, the students are further distracted by the usual worries of adolescence and youth, and the further worries of Indian youth about the chances of employment in an insufficiently developed economy. On the purely material side, they have few facilities or opportunities for wholesome recreations. If they live in hostels, their wardens show little concern for them. If they live at home, they lack conveniences for study and a congenial atmosphere; many who live at home have to make two long journeys every day under rather fatiguing circumstances. During the day, when there are no lectures, coffee houses and corridors are their main gathering places. A small number of colleges and universities apart, the intelligence of the students is not generally awakened nor do they become masters of a substantial body of knowledge.

The condition of their teachers is *mutatis mutandis* of a piece. Low salaries and the attendant financial worries are the common lot of the majority of college teachers, and many university teachers as well. In the colleges, the provision of space and facilities for undistracted study or

consultation with students and colleagues is minimal. The hours of teaching in the colleges are heavy and conditions of work at home, even if the energy and will remained, are unpropitious. Under these conditions it should not be surprising that intellectual curiosity and pleasure in intellectual work are rare among college and even university teachers.

The act of teaching is, to many Indian college teachers, a boring routine. Their teaching is done in accordance with a syllabus in the making of which the majority of them have had no voice. This works against the development of interest in what they teach. The fact that teachers do not believe that their students have serious intellectual interests also helps to dry up the teachers' own interest. The research which they do is scarcely more exhilarating to them. Little research is done in the colleges, partly because the time and facilities are lacking and partly because the special terms and general expectations of employment as a college teacher do not include research as an academic obligation. Much of what is done is done with no serious conviction as to its worthwhileness. A good many of the younger and middle-aged teachers who have taken research degrees never do any research during their teaching careers. Because their postgraduate research was not well supervised, they are often at loose ends when it comes to starting research projects on their own once they have become teachers. This means that research degrees notwithstanding, they often begin their teaching careers without having the experience of a demanding scientific or scholarly exercise. Once the dissertation is completed, such interest in research as there was, largely evaporates. Much of the research that is undertaken is little more than going through the motions of research without a strong desire to be doing it or vivid perception of the standards by which research problems and techniques are to be selected and by which results are to be assessed. The research situation within the colleges and even universities is not helped by the disproportionate concentration of research resources in non-academic research institutions. Because of the siphoning off of so many persons with good research training and aspirations, the "research atmosphere" of the institutions of higher education is attenuated. Often there is simply a "research vacuum."

By no means all of those who are now dispirited began that way. There are some who were fortunate enough to have been well trained and to have done a valuable dissertation in which they were genuinely interested. Of these many have fallen by the wayside because the conditions prevailing in Indian higher educational institutions have been uncongenial to enduring intellectual vitality. The hierarchical concentration of authority within the departments and colleges of Indian universities, the attitude of distrust of seniors towards juniors and subordinates, the cynicism of subordinates about administrative authorities, the often rancorous conflicts about offices and advantages, and the jealousy towards those of superior quality and attainments all have contributed to the deadening of the spirit of intellectual curiosity. Many have been diverted from intellectual concerns into intrigue and conflict over the

small prizes afforded by Indian academic life. On top of all this the bureaucratic structure within which research has had to be done, the dependence on the approval of disapproving superiors, the labyrinth through which equipment made abroad has to be obtained, the difficulties in the maintenance and repair of equipment once obtained, and the hindrances to contact with research workers working on related subjects in India and abroad have all had a discouraging and ultimately benumbing effect. It is, therefore, small wonder that many talented young Indian scholars and scientists who could contribute greatly to the improvement of the intellectual situation in India prefer to work abroad and to delay year after year their return to India. It is generally agreed that it is not exclusively or even primarily the superior remuneration of an appointment in a foreign university or research institution which keeps able young Indians abroad. The financial factor is not negligible, but what seems to be decisive in keeping them abroad is the research-impregnated atmosphere which they find in foreign universities, the helpfulness of academic and research administrators, and above all the proximity of colleagues seriously interested in what they themselves are doing. The supply of young and middle-aged scientists, technologists, administrators, and teachers in India is so short that the loss of the several thousand Indians who are good enough to hold posts abroad cannot be afforded. Yet it would be no gain to India or to the world if these persons were to return and could not find adequate employment for their talents. The phenomenon of the "braindrain" which deprives India of the stimulating presence of some of its better intellects is both a reflection on the state of academic life in India and one of the factors which helps to make it what it is.

The situations of students and teachers roughly described above have been in existence now for a considerable time. One is impressed, in looking at the older reports on Indian university education since the beginning of the present century, by how long-standing many of the problems of the current situation are. What is new is the magnitude of the problems and perhaps their deepening as a result of the extraordinarily rapid expansion of higher education and the development of new expectations regarding the role of higher education in national life. The need to recruit teaching staff beyond the capacity of Indian higher educational institutions to produce them, and the need for these inadequately qualified teachers to teach larger number of poorly prepared students—within an archaic institutional system, in the midst of an unprecedented linguistic crisis, and in an atmosphere of urgency for intellectually planned change and improvement—all accentuate the older problems.

As long as India did not supply its own ruling class, and as long as Indian society did not aspire to the services and accomplishments which go with being a modern society, the efficiency and effectiveness of its educated class were of secondary importance. Now that the progress of India depends, at present almost wholly and in the future entirely, on Indians, the quality of its educated class is of the most crucial significance. For this reason, the present situation calls for titanic efforts at

self-improvement in the higher educational system. As the number of jobs or roles to be filled by highly trained persons increases, the discrepancy between the need and the capacity to meet the need will widen. The situation at present is such that if no deeply penetrating improvements are made in Indian higher education, it will not remain as it is; it will deteriorate further. If Indian higher education does not improve, Indian administrative, organizational, and technological performance will suffer accordingly. Should this happen, the movement towards modernization will become demoralized. Pessimism will become the prevalent mood.

III

The Need for Major Universities

It would be a simple matter to improve the Indian higher educational system if all that had to be done was to envisage the opposite of what exists and to conjure it into existence by administrative measures. It is easy to say that, because standards with respect to the amount of knowledge a student must possess, and with respect to his skill in using that knowledge, are lower than they should be, the standards should be raised. But this does not reckon with qualitative and quantitative requirements for more and better teachers. Where are they to come from? To say that because the present system of examinations has pernicious effects it should be replaced by a system of assessment in which class marks, marks for written tutorial papers, and single course marks should be decisive is easy enough. But if that were done, how would one deal with the dangers of irregularity and favouritism and with the incomparability of criteria? Nor is it difficult to say that each teacher should be permitted to design his own courses; but again the question of the comparability of degrees and of examination marks would arise, as would that of the competence of many of the teachers to design their own courses. It is not difficult to recommend a great increase in the number of books per student and in the number of seats in libraries of colleges; but how can the funds be raised to bring, let us say, fifteen hundred college libraries to a good level? So it goes for many of the defects of present-day higher education in India and their remedies. The defects are increasingly widely acknowledged and with a realism which is rare in recent Indian history. The remedies which are suggested are usually little other than the simple reverse of the defects. Their proposal usually does not take into account the limited resources of finance and personnel available for such reforms, nor does it consider the administrative and political inhibitions operating against their realization. Indeed, it might be said without great exaggeration that many of the proposed remedies for the shortcomings of present-day higher education in India presuppose the existence of conditions which, if they really existed, would have rendered unnecessary the reforms. Yet it would be repugnant to good sense and good morals to say that there is little or nothing that can be done to improve the situation. Much can be done in the coming years to vitalize the colleges and univer-

sities of India, to enable them to train the men and women needed for the progress of India's society, economy, polity, and culture, and to permit Indian academic institutions to take a respected place in the world academic scene. It will not be easy and what needs to be done cannot all be done at once. And whatever is done must be done as part of a long-term plan to give to the Indian people the kind of higher educational system they need.

In what follows I shall not deal with all the changes which are necessary. I shall not deal with the problem of the diversification of Indian secondary education that would permit many persons to be trained in important technical subjects for which a full university course is not needed, and which would therefore take some of the burden of growing numbers off Indian higher education. Nor shall I deal, except on one or two points, with the greatly needed improvement in the standards of the academic stream of Indian secondary education, although without these improvements Indian higher education will continue to work under very burdensome handicaps. I shall not deal with the reallocation of research resources between Indian universities and the national laboratories, although until this is done Indian universities will not begin to produce the young scientists and the scientific research which are called for. I shall also confine myself to what at present are the universities of India, omitting from my considerations the "institutions deemed to be universities under Section 3 of the UGC Act 1956" and "institutions of national importance declared by the Acts of Parliament."¹

I shall preface my proposals by making certain presuppositions. The first is that financial resources available to higher education in India are not adequate at present to bring all institutions—colleges and universities—to a high standard in the provision of libraries, laboratories, teaching "loads," etc. The second presupposition is that, although greatly increased financial resources would make a very significant difference, they alone could not at present accomplish what has to be accomplished, since the insufficient supply of gifted, well-trained, and deeply motivated teachers is too small to staff a large number of universities at a high standard. Not all the universities can be improved simultaneously and equally. For the system as a whole to be improved it must first develop a leaven of high quality.

The third presupposition is that Indian colleges and universities and foreign universities are producing a small number of very outstanding young Indian scientists and scholars who, if they were to enter upon academic careers in India under the right conditions, would make a tremendous contribution to the improvement of Indian academic performance which is our objective.

The fourth presupposition, which is central to what is to follow, is that *the number of high-grade young scientists and scholars produced by the*

¹ It is very likely that the observations about Indian university and college teachers and students made in the first part of this paper do not apply to the institutes of technology.

Indian universities—given the demands of the national laboratories, of the professions of medicine and engineering and the needs of the public service and the private sector for young men of the highest intellectual quality—is not sufficient to provide the leaven of improvement if they are scattered randomly over the entire system of higher education.

The fifth presupposition derives from the frequently made observation that absorption into the routine life of an ordinary Indian academic institution results in a diminished intellectual motivation in numerous young men who at the time of their entry were regarded as of outstanding promise. The burden of a heavy teaching load, numerous and unchallenging students, depressed and intellectually unambitious colleagues, an administrative system which intentionally or unintentionally does not encourage and even actively discourages intellectual exertion, all contribute to the diminution of intellectual motivation. Talents are unable to come to fruition because of the intellectually lifeless environments into which they are thrust. The able persons who could provide the required leavening influence are not only rendered uninfluential when they are scattered; their own creative capacities decay too under conditions of scattering.

The sixth presupposition is that in the contemporary world at least a few major centres of intellectual creativity, operating actually at the highest world standard, are indispensable to a more widely diffused improvement of the capacity for achievement throughout the whole national intellectual system. It has been observed quite often that India still suffers from the lack of an intellectual community with its centre of gravity inside India. By this it is meant that Indian scholars and scientists in fields which are internationally cultivated still tend to look outside of India for their seats of judgment, for their intellectual models for the problems which they study, for the books they read, and for their forum of appreciation and approval. This is damaging to Indian academic life in a number of ways. For one thing, it means that Indian problems are not seen in their concreteness and particularity; as a result, techniques and theories are not adapted to the Indian situation. But no less important is the second consequence that, the bearers and incorporators of the models of intellectual performance being so far away and personal contact with them being so infrequent, the effectiveness of the models in influencing the intellectual activity of those who admire them is kept in a weak condition. Thirdly, as long as the locus of the standards which Indian academics purport to respect is outside of India, Indian academics will be affected with a lack of self-esteem. The self-confidence necessary for doing creative intellectual work will not be strong enough to give teachers and research workers the courage they need to try out new ways of doing intellectual things.²

Of course, there are exceptions to these generalizations. There are Indian scholars and scientists who do manage to do very valuable work

² Of course, I am not recommending intellectual autarchy as an ideal. No country, however outstanding it is in its scientific and scholarly accomplishments, can be entirely self-sufficient. It would be wasteful and

in their respective fields. But they are exceptions. At present an Indian academic must be a man of powerful intellectual character, in some ways nearly a genius, with an overpowering intellectual motivation and a compulsive devotion to the universal standards of modern intellectual work, to withstand intellectually the inhospitable environment of the Indian college or university. That there are such persons is evidence of their survival capacity rather than of the nurturant effects of the Indian academic environment.

Even very gifted men need an environment which will stimulate them, which will keep alive their vitality through interaction with other no less vital minds. Awareness that others are devoted to intellectual things, that they are striving to adhere to the highest standards of performance, that they are stretching themselves to the fullest exertion of their capacities, has a continuously regenerative effect. It does so partly by arousing a competitive spirit but it does so no less by a constant refreshment of intellectual zeal, curiosity, and energy. By being in the presence of others with serious and intensive intellectual aspirations and activities, an individual's intellectual sensitivity is kept alert and dominant. The awareness of the intellectual demandingness of others keeps one's own demands on one's self at a high and continuous level of intensity. Frequent and direct intellectual communication is a necessary condition of intellectual community. Face-to-face intellectual communication is a necessary condition of intellectual community. Where such face-to-face intellectual communities do not exist, individual scholars, scientists, and teachers are thrust back upon themselves; too often their powers are not enough to withstand the "stimulus-starvation" which isolation imposes. This starvation is avoidable, and fairly easily avoidable, by the formation of face-to-face intellectual communities in which men of high potentialities, by their presence together and their frequent communication, help each other—usually without deliberate intent—to bring their potentialities to realization.

These communities require a "critical mass" of still indeterminate size. Of course, mere numbers are not enough: the individuals themselves must have the capacities. But if the capacities are there, then the "critical mass" can make a very great difference.

The lesson for India in all this is clear. It must be a major concern of Indian higher educational policy to foster the formation of these "critical masses," these face-to-face intellectual communities within particular disciplines and clusters of disciplines. This must be done not only

foolish to attempt to be entirely self-sufficient. But there is a great difference between participating in the world intellectual community simply from the periphery, as a reproducer or as a minor extender of what has been discovered or invented elsewhere, and participating in it as one centre in a network of centres, creating, giving, and receiving as an equal. The desired transcendence of India's present state of scientific and scholarly provinciality can be attained not by the deliberate refusal to learn what can be learned from abroad but only by the generation of certain centres of creativity within India.

for the intellectual benefit of the individuals immediately involved but also for the benefit of the entire Indian higher educational system. The small, relatively concentrated, densely populated, face-to-face intellectual communities are prerequisite to the formation of a nationwide intellectual community. The formation of the nationwide intellectual community depends upon the existence of a few³ standard-setting, standard-maintaining, and standard-exemplifying centres. These latter can in a variety of ways and in the course of time provide the intellectual leadership necessary to galvanize the rest of the system.

"Critical masses" have, therefore, to be assembled in a variety of subjects and in clusters of subjects. Departments and whole faculties are the institutional settings for such "critical masses." That they are possible in India is amply attested by the "Centres of Advanced Study." These must serve as one, perhaps the main, point of departure for the reconstruction of Indian academic life.

The amount of high-grade talent, sufficiently trained and motivated, is, as has been said above, not enough to form intellectual communities in every department in every university in India. But there is probably enough talent to form enough of the Centres of Advanced Study in a small number of universities for those universities to develop into the more global intellectual communities which will then become major centres of scientific and scholarly creativity. It is legitimate to expect that these will then produce students of the highest merit and will set a standard which will in time impose itself broadly throughout the Indian higher educational system.

The development of two or three such major (or national) universities in India over the next five or ten years is definitely practicable. Such development would have a powerful effect on the quality of Indian academic life and the university system as a whole. For one thing, instead of having to look to London or Oxford or Harvard or M.I.T. for inspiration and reinforcement, Indian scientists and scholars would be able to look to centres within their own country. This would be a change of the greatest significance. For one thing, the stimulus, once it becomes "Indianized," could be much more continuous and it would be less dependent on costly and infrequent personal contacts. Also, in becoming naturalized in the Indian environment, it will be directed towards problems to which Indian scientists and scholars could give themselves without feeling disjointed from their Indian milieu. The strain of a disjunction from their home environment would be diminished; their intellectual creativity might be correspondingly enhanced, and they themselves would find more stimulus and pleasure in their intellectual activities.

Thus the function of providing a model of academic performance which

³ I say "few" advisedly. Neither the manpower nor the financial resources are at present available for more than a few. The mere declaration that an institution should henceforth be regarded as such a "centre" will not make it one. For this, painstaking caution, courageous willingness to take a risk, and a readiness to face the opposition of those who live by slogans are absolutely necessary.

would be much more pressingly present would, in consequence, be more effectively performed. The awareness of a continuous creativity on the part of Indian academics would enlarge self-confidence throughout the academic population of India. It would be easier for Indian scholars and scientists who have not studied abroad to feel akin to their own centres of creativity; feeling that way would encourage them to do more on their own.⁴ The sense of kinship would be fostered and reinforced by the relative ease of direct individual contact.

These major or national universities would also make their existence felt not only by their works of research and by the excellent training which they would give to their students, but also by providing outstanding personnel for the staffs of other Indian universities, colleges, and for non-academic intellectual institutions. In this way their graduates would infuse into these Indian institutions the standards which they had acquired in their own, and they would contribute thereby to the spread of this ethos of intense intellectual exertion and devotion into the institutions in which they would be employed. At present there is scarcely a single such university in the Indian academic world which sets standards and provides personnel of high quality for the rest of the system.

There is a need for certain elite institutions within any academic system. Despite the heterogeneity of the American system of higher education and its wide range of dispersion of quality, the high level of the upper quartils of the distribution is attributable to the role of Chicago, Harvard, and Columbia in the first quarter of the present century. It was the Ph.D.'s from these institutions who formed the nucleus of superior research workers and teachers from whom the upper stratum of the American higher educational system has developed. A similar process, but even more striking, is observable in the history of the British system in the first half of the present century. The British system of university education is notable for its high average level and the relative narrowness of the range of dispersion of quality between the

⁴ The "England-returned" or the "America-returned" would no longer be a high caste in their own right. Those who have not "returned" from anywhere would not have to feel at a disadvantage. This by no means implies that, once this desirable state is attained, Indian scientists and scholars should no longer go abroad for purposes of further training, research, or for prolonged consultation with their foreign colleagues. This will always be necessary, but it will then have a different function. Its future function will be to enable first-class Indian scholars and scientists to work with particular "masters" who are unique in the whole world, and to permit mature young scholars and scientists to learn from their foreign peers; it will no longer be aimed at providing a young Indian with the first-class postgraduate training which he cannot obtain in his own country.

There will, of course, continue for some time to be certain subjects which are urgently needed on a small but definite scale and which will have to be pursued abroad. Such subjects are the Chinese language, history, politics, and culture, Indonesian, Japanese, and some scientific subjects which are very costly to do on a proper scale and for which the demand is not great but for which there is urgent need.

highest and the lowest institutions in the system. To some extent this high average level is attributable to the small numbers receiving higher education and to the demandingness of the British secondary school syllabus, pedagogy, and examinations. But it is no less attributable to the fact that until recently in most subjects the staff of the modern universities was supplied to a disproportionate extent by the two ancient universities which by 1900 had taken their place as distinguished centres of science and scholarship and superior teaching. (The relationship between the ancient and the modern universities has now changed, particularly in the scientific subjects, since the modern universities, having established a high standard, are capable not only of staffing themselves but also of contributing to the staffs of the ancient universities as well).

This is the kind of process of reclamation which I envisage for the Indian universities. It is a process of consolidation of high quality in those institutions which are already among the most eminent by virtue of their acknowledged excellence of performance in a few fields. This process of consolidation will involve attracting to themselves the best of the younger generation of scholars and scientists who have already completed their training, and the best of the student generation at the undergraduate and postgraduate levels.

It may be asserted that what I propose here is undemocratic, that it seeks to institute a system of elite education by favouring certain institutions and impoverishing others. To this, my answer is that Indian democracy cannot flourish unless it has available the services of a highly trained and powerfully motivated educated class. The present higher educational system in India is not producing this highly trained educated class, or it does so in spite of itself. Unless a system can be devised which will produce such persons in much larger numbers than is being done today, every aspect of India's development will be prejudicially affected. Moreover, this process of concentration as I conceive of it is something which is neither absolute nor permanent. It is a proposal for a system which as it becomes effective will be self-liquidating. The success of the proposal will consist precisely in raising markedly the level of half or more of the universities of the country to a very respectable standard by 1990. Thus what might appear at first sight as a sacrifice of most of the universities to the advantage of a few is actually the only available means to a general and comprehensive improvement over the next quarter century.

IV

Steps To Be Taken for the Establishment of Major Universities

If we grant the correctness of the foregoing analysis and argument, the next question to discuss is how these major or national universities are to be brought into realization within the relatively short period of one or two decades. There are two main alternatives: (1) to begin certain new universities from scratch; and (2) to build from certain exist-

ing universities which are already relatively outstanding in particular subjects or groups of subjects and thereby provide the nucleus around which further growth will occur.

The first alternative is to be refused. There are already enough universities in India.⁵ and the financial and manpower resources for university education are already spread too thinly. Adding two or three new universities, each large enough, well enough staffed, and well enough equipped with buildings, hostels, laboratories, and libraries to meet the intended standard would add a large and avoidable capital expenditure to what is already provided with great difficulty. Furthermore, the time required to bring these universities into operation would delay the process of reconstruction of the total university system in which the new major or national universities are to play such a central role. There would, moreover, be a certain amount of animosity aroused against the new universities which would appear to be favoured by the Government without having any demonstrated claim or right to favours.

The second alternative is therefore the one to be chosen. What then are the preconditions for the transformation of certain of the existing universities into major ones? These may be listed under two main heads. The first is the recruitment of students well enough endowed and qualified to benefit from superior training. The second is the recruitment of staff who are intellectually distinguished enough to provide the training for which the first-class students are fit, and who can also by their research contributions raise the level of Indian performance in their respective subjects. Certain desirable organizational changes in the relations between universities and colleges will be dealt with where they are appropriate.

The recruitment of students. A major university requires not only outstanding staff members; it also requires students of outstanding capacities and promise. In all outstanding universities, students do much to educate each other. They stimulate each other and they learn from each other. They can do so, however, only when they are assembled in sufficient number to form a "critical mass", not unlike the "critical mass" which is required within the teaching and research staffs.

To assemble enough very high-grade students in a few universities and in a few departments, they must be recruited on an all-India basis. At present Indian students tend for a variety of reasons to be recruited locally, and except for a few institutions the few students of superior capacities are usually swamped by the many who are much less well prepared for intensive higher education. Many of these good ones lose

⁵ I do not exclude the creation of new universities where these will be no more than administration regroupings of existing colleges, and where the new university does not create independently staffed teaching departments but forms its teaching staff from the manpower available to it in the staffs of constituent colleges. But I do not welcome them either. I expect them only in so far as they reduce the size of certain existing universities, and above all do not create a further demand for the dispersion of intellectual talent, funds, and administrative ability, all of which are very scarce.

their motivation for intellectual work in the midst of the larger number of those who are poorly qualified and poorly motivated. Consequently they do not realize their own potentialities and they do not stimulate their fellow students in the way in which students do in the best universities. They are not powerful enough to offset the downward drag of the uninterested students. Instead of pulling the others upward, they themselves sink downward, or at best work by themselves and preserve their own superior intellectual qualities. They are unable to add much to the intellectual life of their fellow students.

The problem, however, is one of attracting to the major universities (and colleges) the most gifted, the intellectually most curious, and the most self-disciplined of their respective age-cohorts from all over India. One way to do this is to establish a national scholarship system which, on the basis of attainment in a single country-wide scholarship examination, interviews, etc., would, within the restrictions of a means test, meet all the costs of university education through the B.A. or B.Sc. to the level of M.A. or M.Sc.⁶ of those who wish and who are willing to study in those fields and at the universities (and in certain of the affiliated or constituent colleges⁷ of those universities) in which the Centres of Advanced Study exist.⁸ (The scholarships would include tuition and other university fees, maintenance, an allowance for textbooks, and a small allowance for personal expenses such as laundry, haircuts, etc.). If provided on a scale such that in the present situation, in which there are twenty-five Centres of Advanced Study, there would be between 500 and 1000 students holding these scholarships at any one time, and assuming that their wastage rate would be low, they would yield between 100 and

⁶ A similar programme for the Ph.D. would also be in order.

⁷ This proposal requires that in universities with Centres of Advanced Study a definite programme of developing superior undergraduate work in the relevant field in certain of the best colleges would be vigorously prosecuted. It requires that the major university, its departments with Centres of Advanced Study, and the particular colleges within the university selected for special development, would co-operate intimately in the development of a greatly improved undergraduate education. Certain measures which would promote this end are set forth later in this report.

⁸ If the scholarships were granted on the condition that they were tenable only at the major universities where Centres of Advanced Study exist, there could undoubtedly be some successful candidates who would not wish to travel so far from their homes. A dilemma exists about what might be done about these students. On the one side, to allow them to use their scholarships at just any college or university, despite its standing in the subject, would defeat the purpose of the system. On the other, the students selected by the examination-cum-interview procedure would be promising young persons whose talents, once they are discovered, should not be allowed to go to waste. One solution would be to permit such scholarship winners to use their scholarships (which might be less ample) at *certain* colleges near their homes which have a relatively outstanding record of work in the particular field. Such scholarships should be made less attractive in terms of money and other advantages than those taken up at major universities.

200 M.A.'s or M.Sc.'s per annum over the whole range of the subjects which are at present being studied and taught by departments which are Centres of Advanced Study. As the number of subjects or fields in which Centres of Advanced Study exist increased, the number of scholarships granted should be increased proportionately. This scholarship programme would mean that each Centre of Advanced Study would be guaranteed a group of students worthy of its efforts, and that these very promising students would receive the sort of training which would bring out their best potentialities.

What will induce young people to go far from home, and their parents to allow them to do so, in quest of a better education when a commonly accepted style of education is available close to home and within their own region? Some of the motivation will come from parents who are sophisticated enough to appreciate the value of a superior higher education for their offspring, both as a good in itself and as a means to a more remunerative and more esteemed career. But this will not be sufficient. For one thing, it might well take a long time before many parents of intelligent children will spontaneously regard education in a superior university as more desirable than education in a less distinguished one and will seek to move their children in the direction of the former. Much responsibility devolves, therefore, on the State Ministries of Education and on the University Grants Commission to make the secondary schools aware of the opportunities available to their better students. This will involve much careful publicity among the principals of secondary schools to make them aware of the distinction which would be conferred on their schools by having their most promising pupils obtain admission to a major university, and even more to have the added distinction of winning a munificent studentship to a major university.

Just as in American universities members of the teaching and administrative staffs and of the alumni associations cultivate their relationships with certain leading secondary schools in order to persuade principals and teachers to direct the best pupils to their universities, and as in the United Kingdom special relationships develop between particular colleges (and sometimes departments) of universities and their graduates who are teaching in certain leading grammar and public schools in order to obtain a flow of the most qualified students from the secondary school to the particular university college (or department), so a similar network of relationships will have to be developed in India.

These efforts, direct and indirect, to persuade the most promising students to sit for the national scholarship examinations, should be sup-

In addition to scholarships granted for work at departments of universities (and their associated colleges) which are already Centres of Advanced Study in a particular field, a parallel set of scholarships might be made available for study at "aspirant Centres of Advanced Study" (*vide infra*) in the particular subjects in which the latter "aspirant Centres" specialize. (This would be part of the programme of generating new Centres of Advanced Study).

plemented by corresponding efforts to persuade the parents of these students to encourage or at least to allow their talented offspring to go to college and university in a part of India remote from the one in which they have lived all their lives.

Naturally not all the scholarship winners would turn out to be brilliant students in their university careers, nor would they all turn out to be distinguished scholars, scientists, and teachers. I assume, however, that there would be enough students really successful at each institution to raise the standard of student performance in their respective fields by a considerable margin,⁹ and that a large proportion of them would subsequently go on to make really worthwhile contributions to science, scholarship, and teaching.

The national scholarship scheme would not necessarily guarantee that all of the student body in the major or national universities in question would, within a few years after this programme begins, be of the highest quality. It would, however, guarantee that a large proportion of those in the subjects in which the university is outstanding would be such. And as such, it is legitimate to expect that they would by their intellectual enthusiasm and assiduity help to set a standard among the students, both within their departments and in adjacent departments, which would become pervasive at first in their own departments and then more widely throughout the university.

As a result of this improvement in student performance, there would be within a period of four to six years an enlarged reservoir of better young teachers and research workers in the fields in which they have been trained. They would then become available to become teachers in their subjects or research workers.¹⁰ Even if only one-half of each M.A. or M.Sc. class in their particular field entered the college and university teaching profession, they would in ten years form a numerically and qualitatively significant addition to the teaching corps at the higher educational level. They should be strongly encouraged to pursue academic careers. Exceptional efforts should be made to place them in those colleges and universities other than their own where their talents could be exercised and where accordingly they could contribute to the raising of the level.

⁹ This procedure would also be a contribution to the equalization of educational opportunity to which the Education Commission is committed. Students whose families could afford to meet all or some of their educational experience would be granted the scholarships with a reduction in the size of grant corresponding to their family's capacity to make up the difference. They would still, even where they did not have to avail themselves of any of the scholarship grant, have the honour of being a "National Scholar" and the privilege of receiving an outstanding training at a university which is a Centre of Advanced Study or at a college associated with it in their field of interest.

¹⁰ Of course, many of them would go on to work for Ph.D.'s in their respective subjects, and scholarships for this purpose would have to be provided.

The recruitment of staff. The procedure just recommended would in the relatively near future—let us say within a decade—markedly increase the number of well-trained and well-motivated teachers in a number of subjects. But it will do so if this concentration of very promising students are taught by a body of teachers whose achievements and whose capacity to inspire and stimulate match the gifts of their students. It is necessary, therefore, to begin very quickly to assemble outstanding teachers and research workers in the universities where these national scholarship students will be studying. This is necessary for the sake both of the students and of the teachers. The conservation and fructification of manpower for teaching and research require concentration and this cannot be left to the ordinary processes of recruitment.

Departments which are Centres of Advanced Study should therefore be constantly on the alert to improve the quality of the recruits to their teaching and research staffs. The Director of each Centre and the Committee with which he governs the Centre should be in a position to act expeditiously adding to its staff persons of outstanding merit. For one thing, they should comb the list of Indians abroad, find out which ones are regarded as distinctly outstanding in performance and promise, and try to bring them back to India in a way which will make them feel at home at once. An ample provision of adequate research facilities, an atmosphere of genuinely intellectual conviviality, and bright and hard-working undergraduate and research students are indispensable for this purpose.

At the same time, the field of available candidates within India should be similarly scrutinized and attempts should be made to bring to the Centres of Advanced Study, within the limits of the Centres' budgets, men who have recently done very good work in the field in question and who might do very distinguished work under more favourable circumstances. The search should be directed primarily at persons below forty who are thought still to have before them a considerable period of creativity. The search should, moreover, be conducted on behalf both of the Centre or department itself and of the related sections of the affiliated college.

To do these things will require considerable modification of appointment procedures. It will require, even more, the fixing of the very highest standards for recruitment. It will not be necessary for Centres of Advanced Study to recruit men on an emergency basis for routine teaching; they must therefore never be willing to say "the post had to be filled; he will do well enough." Even if it should happen that a post *has* to be filled, it is better to leave it unfilled and to make some temporary arrangements than to fill it with a long-term (four or five years) appointee who was appointed only because he was available. This energetic, active policy or requirement will require that the ruling body of a Centre of Advanced Study be given a certain amount of discretionary power in the use of its funds. A "contingency fund" should be made available to the Vice-Chancellor and the Director of a Centre for Advanced Study

that may be used to provide financially more attractive terms of appointment to persons of exceptional *promise and performance*.¹¹

(These terms of appointment should *never* be used simply to reward *past* performance by persons who have passed the peak of their creative powers).

It is very important that, given the expected flexibility of defining the terms of employment, Centre of Advanced Study should strictly forbear from raiding each others' staff; it is also important that they should try to avoid driving up the price level of the type of young men whom they wish to attract to their Centres from other parts of the Indian higher educational system. A certain amount of competition is desirable but the limitations of Indian financial resources will have to be borne in mind.

In building up a university as a cluster of centres, it will be necessary for the universities and the leading of its affiliated or constituent colleges to conduct an energetic search throughout India for outstandingly promising young men for its teaching-cum-research staff. Each department or faculty or board of studies should have a specially appointed personnel committee in the fields in which it is already distinguished or in which it seeks distinction. These committees should have as a major responsibility the search for the most outstanding and promising Ph.D.'s and M.A.'s and M.Sc's, and even recent graduates in their respective fields in India and abroad. These young men should be approached by the committees, which should not passively await applications; they should go out and actively seek candidates for appointments. They should seek to interest gifted young men in entry into an academic career. (Young men in India often do not seek to enter a career but often find themselves in one, in which they become quite eminent).

The search for staff, like the recruitment of students, should not be confined to the immediate region of the country but must be nationwide (and worldwide). Members of the Committees should be charged with establishing contacts with outstanding colleges and maintaining them. Young prospects should be given certain inducements such as those referred to earlier, e.g., the possibility of beginning higher on the scale within a grade than their age and experience would allow. They should be assured of research opportunities, opportunities for study leave, etc.

The personnel committee should be a university body but it should include the better, more intellectually distinguished teachers within the field in the (constituent or) affiliated colleges of the university. Outstanding candidates should be sought for collegiate as well as for university appointments.

¹¹ Similar procedures will have to be worked out to improve the quality of staff in the related departments of certain of the affiliated colleges of major universities. Perhaps the "contingency fund" should be large enough to permit the support of special appointments to college staff; certainly it should be available for "joint appointments" of especially qualified persons to college and university staffs.

The personnel committee should play an active advisory role in collegiate appointments. Even though appointments to college staffs will perhaps still remain a collegiate prerogative, it is desirable that a strong convention be established whereby colleges will consult—and not merely in a perfunctory way—with the personnel committee of the appropriate university department or Centre of Advanced Study when making an appointment within the field of competence of the committee. One device which might be introduced would be to create a category which existed in the University of London: namely, that of “recognized teachers of the University.” This would be a distinction but not merely a honorific one. It should carry with it certain university privileges, such as the right to give a lecture course or a seminar within the university department in question as well as making use of the research facilities of the particular university department.

V

The Extension of Excellence within a University

A university which is already outstanding in a variety of subjects, as manifested in the presence of a number of Centres of Advanced Study, has within it a force for movement in the direction of distinction in other fields as well. Such universities should be given incentives for the further improvement of their quality beyond the boundaries of the fields in which they have already attained distinction. They should be encouraged to strive in this direction by a grant in proportion to the number of Centres they already possess. This grant should be applicable exclusively for the purpose of raising to the level of a Centre for Advanced Study other departments within the university. These grants for “aspirant centres” might be used for the recruitment of staff and the acquisition of equipment and books within the field to be developed. The grants should be in the first instance be made for a five-year period, to be renewed for a second five-year period if substantial progress towards the goal is made during the first five-year period. (It is assumed here that the same machinery which the UGC uses at present to determine whether a department is worthy of the distinction of being a Centre of Advanced Study would be operative in assessment of the progress made by an “aspirant” to the distinction. It is also to be hoped that its standards will become more and more exigent and that it will conduct rigorous quinquennial or decennial reviews of existing Centres).¹²

A university, to extend the area of its excellence into fields in which it has not yet attained the eminence of a Centre of Advanced Study,

¹² Each Centre of Advanced Study should have a visiting committee, consisting of very outstanding Indian and foreign experts who will conduct a *thorough* review and appraisal of the accomplishments of the Centre. These visiting committees should not include members of the Centre under review and they must not hesitate to be outspokenly critical. Above all they must seek to offer positive suggestions for the improvement of teaching and research within the Centre.

will require a considerable freedom and daring on the part of the Vice-Chancellor and the appointments committee to select for senior posts (professorships and readerships) many young men who, in the normal course of an academic career in the Indian university, could not expect to reach such a high position at an early age. For this purpose it will be desirable to introduce innovations in the pattern of appointments, such as the establishment of more new professorships and readerships, so that the distribution by ranks will be shifted upwards. Newly recruited staff members should be begun at higher than the minimum point in their grade. To guard against mistaken judgments it might be desirable to make these readerships tenable for seven-year periods in the first instance and professorships for ten-year periods, with the clear understanding that permanence of tenure will be granted once it is established that the incumbent has performed up to the level expected at the time of his appointment. To compensate him for the withholding of permanent tenure in the first instance, he should be compensated by certain advantages, such as secretarial services, a research fund to be placed at his disposal,¹³ or certain bonus payments and indemnity for removal costs if, at the end of his probationary period, he is not granted permanent tenure. He might also be given the assurance of a sabbatical year for research at full salary.

All of these proposals to improve greatly the average quality of the staff members of certain universities presuppose that they will not function simply as isolated individual intelligences. Rather, it is assumed that by a vigorous interaction they will fortify and enhance each others' intellectual powers and accomplishments. Hence, once the persons of the desired quality are assembled, it is necessary that they be amalgamated in an intellectually effective community. Meetings as such will not be helpful if they are only about the business of administration, finances, etc. Meetings should be about the subject matter and they should be of both formal and informal sorts. Small informal seminars to "try out" ideas and to plan new work, as well as formal seminars to report on work in progress or completed, are desirable. In both of these, it is most necessary that the "ethics of discussion" be carefully developed. The common tendency to talk while another person is talking, or to interrupt repeatedly, or to whisper audibly on the side, must be guarded against. Likewise an attitude of readiness "to shoot down" other peoples' ideas must be replaced by a more constructive attitude which seeks to bring out the strong points and possibilities of the other person's ideas. There is no formula for this process; it will be brought about by circumspection and self-discipline, by mutual esteem and confidence. (Advanced students and outstanding and promising undergraduates [from the colleges] should be brought into these gatherings).

The Major University and the Affiliated Colleges: Centres of Advanced Study should seek to bring the relevant teachers of their affiliated

¹³ Expenditures from this fund should not need the approval of a senior staff member or administrator, although they would have to be accounted for in the regular way.

colleges into closer contact with the work of the Centre. The better qualified and more interested teachers in a field within the affiliated colleges should be invited and encouraged to attend staff and postgraduate seminars of the Centre, as should the best postgraduate (and most advanced third-year undergraduate) students of the affiliated colleges in the field. Opportunities for research within the framework of the Centre should be provided for such college teachers—in accordance with the merits of the research schemes which they might put up and with an assessment of their capacities for doing the research in question.

In universities which already have one or more Centres of Advanced Study, the privilege of association with the Centre should, as already suggested, be discriminatingly conferred on the college teachers of subjects within the province of the Centre. These privileges should include the right to use the equipment of the laboratories and the libraries of the Centres—where a serious research scheme has been put up and where there is good reason to believe that it can be successfully prosecuted. "Partial study leave" from full-time teaching obligations should be facilitated by compensation from the Centre to the college, where the college cannot afford to pay the teacher's salary during the period of his "study leave." The seniority and other privileges of the teacher on leave from his college for this purpose should be guaranteed by the college. (Other features of this pattern have already been referred to).

Major universities—and others as well—should be urged to use their existing powers to disaffiliate colleges which do not conform with stringent standards. A machinery adequate for this purpose should be established. Borderline colleges should be warned of the danger of disaffiliation; those which seem capable of improving themselves should be given opportunities and incentives to do so in the form of special grants. Those which after a certain period do not show an appropriate advancement of their standards of admission, of students, in the qualifications of their staff, in provision for their students and staff, and in examination performance, should then be disaffiliated. Those which do show the necessary improvement should be helped to improve further.¹⁴

VI

The Extension of Excellence among the Universities

What incentives will the less than first-class institutions have to respond to the standard set by the major institutions? I count in the first instance on a quickening of intellectual conscience. Awareness that an-

¹⁴ One of the ways in which this might be done would be to make available to the major universities special earmarked grants for the upgrading of their colleges out of the funds already allocated by the UGC for the improvement of colleges. Thus, the procedure recommended above involves no revolutionary departure from existing practice in India; it only seeks to make the existing practice more effective as part of the larger scheme of improvement through the greater concentration of resources at points most likely to bear fruit.

other Indian institution is doing better work, that other, fairly near at hand, Indian scholars and scientists are doing better work, will arouse emulatory impulses as regards the standard. An improvement in the flow of Indian scientific and scholarly communications will stimulate thought of a non-imitative kind; the stimulus to debate, to discuss an idea might be intensified, and with it the desire to produce something better. Furthermore, in the course of time the graduates of the major universities will find appointments in the other universities, and they will be even more responsive to the accomplishments at their original universities; they will share the standards and will wish to keep more closely attuned to what is being accomplished there; they will be more actively receptive to the new ideas emanating from the major universities and will be more disposed to enter into an intellectual dialogue through their own contributions to research and scholarship.

In addition to the efforts at collective self-improvement in emulation of the major university centres, there should also be a simple pecuniary incentive for self-improvement. If there are differences in salary scales between the major and the other universities—which I think there should be—then it should be open to a university to improve its salary scale—in so far as this scale is affected by UGC grants—by showing itself to be worthy of the higher scale. By proving its worth through the attainment of the status of a Centre of Advanced Study in a number of fields, a university, hitherto not regarded as a major university, should be considered for reclassification as a major university. With this recognition of its higher quality should go the support of the UGC for its maintenance of the higher salary scale.¹⁵

But will these measures be enough to cause an infusion and maintenance of higher standards into the other universities in the Indian system? It is probable that the process would be furthered by some additional supporting mechanisms. Among these might be mentioned: invitations to promising scholars and scientists from other universities to do research and to conduct seminars for stipulated periods (such as a term or a session) at one of the Centres of Advanced Study in the major universities. The advantages of such an arrangement would be twofold: (1) It would contribute to the intellectual refreshment of staff members of the other universities, and it would thereby contribute to the refreshment of the other universities through the enlivenment which those who had spent some time at a Centre of Advanced Study would bring back; and (2) It would give an incentive

¹⁵ The UGC has over a number of years sought to raise the salary scales of university teachers throughout India. Its grants were conditional on the State's agreement to bear the cost for the improved scale after the initial period of UGC support. This was a system which discriminated against those universities which were located in States where governments did not feel able to take over the financial burden. What I suggest here is that the UGC should cease trying to equalize salary scales throughout the Indian university system and should put into practice a scheme of differential rewards in accordance with merit. The type of discrimination I am suggesting would do much to impel universities to improve their standard, and it would contribute to a genuinely fruitful equalitarianism.

to members of the other universities to exert themselves so as to win the distinction and the advantages of such an invitation.

A further pressure which might be exerted on the other universities to improve themselves would be constituted by the ever-present possibility of self-upgrading for individual departments through becoming Centres of Advanced Study. They could do this by developing such excellence in their research and teaching that their merit would be recognized formally by the UGC, in the granting of Centre of Advanced Study status,¹⁶ and with it the various advantages which go with that status.

Strong inter-university ties should be formed among members of Centres of Advanced Study and members of aspirant Centres in particular fields of research. Small two- to three-day conferences in which only very few papers are presented, and in which critical and constructive discussion form the main part of the agenda, should be encouraged. They should be provided for in the grants made to the Centres.¹⁷

The Summer Refresher Course Schemes should also continue. Syllabus review committees for individual subjects should be established as standing committees to consider in full detail what constitutes a proper syllabus in their respective subjects, and to examine and criticize the syllabi of particular universities in their field of competence. The syllabus review committees should include a few members from foreign universities which are outstanding in the subject, as well as members from Indian Centres of Advanced Study in the subject in question. It is not recommended here that the powers of the syllabus review committee should be more than advisory. The UGC might wish, however, to institute an incentive scheme by offering to defray part of the library costs of acquiring new text and reference books and new laboratory demonstration equipment for the universities which institute new syllabi.

To give a greater stimulus to teachers in colleges, a certain freedom in teaching should be introduced that would allow teachers to teach a little more in accordance with their own propensities.

One way in which this could be done would be to permit to the teachers of a college which has been assessed as meritorious the privilege of framing their own examination questions in accordance with a syllabus of their own making. This would not mean that the entire examination would be made up by the college, but only some proportion of it. The proportion of the total examination for which the college could take responsibility could be correlated to the merit of the college. The merit could—as a first approximation—be measured by the proportion of passes of the students of the college in university examinations over the past three or four years (or,

¹⁶ No new institutional mechanism need be devised for this purpose. The existing machinery would be adequate. It will of course have to continue to resist the pressure for the award of Centre of Advanced Study status where there is no clear-cut evidence that it is merited.

¹⁷ The existing professional associations tend to be too large; their annual meetings are too crowded with a motley of papers, and too little opportunity is afforded for intensive and continuous discussion.

alternatively or in combination, the number or proportion of Firsts which student-examinees have received in university examinations over the past five years). Thus the better the teaching performance of the college staff as measured by the proportion of passes (or Firsts), the freer the teachers of the college would be to teach in accordance with their own intellectual bent. The privilege could be college-wide or it could be accorded differentially to the various "departments" of the college in accordance with their merit—as calculated by the abovementioned indices. It could even be granted to individual teachers who are responsible for a particular paper in their college.

To avoid the greatly feared dangers of favouritism and bias in examining, multiple reading could still be provided. Every script would be read by two readers, working in complete independence of each other. One of the two readers could be an external examiner.

Similar incentives to the improvement of teaching, research, and equipment by individual colleges could be provided. For example, colleges having a certain number of books per student in their libraries, and having added books above a certain minimum rate over a preceding period of three or five years, might be given matching grants to improve their libraries further. Colleges which have permitted above a certain amount of study leave for their teaching staff, with tangible results in the form of research publications over a preceding period of five years, might be given matching grants for more study leave over the ensuing five-year period.

Similarly, colleges which, while maintaining high levels in books per student in their libraries, percentage of passes or Firsts, etc., have also avoided significant breaches of discipline over a three-year period, might be given grants or matching grants for staff and student amenities, etc.

To work out a good general basis for deciding which colleges are to be rewarded with special treatments, which ones should be given incentives and which ones should be warned, it might be practicable to classify all the colleges in India into five classes on the basis of such criteria as (1-a) proportion of first classes and (1-b) proportion of passes—over the preceding five-year period; (2) amount and quality of research done by staff members; (3) number of books per student in the college library; (4) number of library places per 100 students in the college library; (5) quality of student discipline over preceding five-year period; (6) performance of graduates of the colleges in national scholarship examinations; (7) extent to which innovations in teaching procedures have been made in preceding five-year period; etc., etc. (These criteria are intended only illustratively. They must be defined much more precisely and techniques of applying them in practice must be worked out. Likewise the institutional machinery for such quinquennial reviews must also be elaborated.) Colleges which rank high on the list or which rise from one given quinquennium to the next should be given certain rewards, such as salary bonuses for their teaching staff, grants for libraries, laboratories, and amenities for staff and students, etc.

Finally, where there is an extremely outstanding college or a small cluster of very good colleges within a large university which seems incapable of

improving itself markedly, consideration might be given to the constitution of the college or colleges into an independent university offering its own degrees up to the level of M.A. and M.Sc. To make the new university into a full university with the advanced research facilities necessary for Ph.D. training would be inadvisable in view of the limited financial resources and manpower available. Still, the limited independence which would be provided would open the way for an emancipation of the powers which would otherwise be constricted or even crushed by the massive weight of an unwieldy and inferior university.

VII

Concluding Remarks

The foregoing proposal is only a sketch of what seems to me to be the only way to change the direction of the existing current in Indian higher education. It would involve no restriction of the number of persons admitted to higher education. It would involve no discrimination in favour of any linguistic (or regional) sector of Indian society. It aims only at the effective attainment of the goals which are inherent in the support which is at present being given to higher education in India. These goals are the production of the important and useful works of science and scholarship and of highly trained persons capable of contributing to India's social, economic, moral, intellectual, and cultural advancement.

The mode of pursuit of these goals which we recommend here proceeds by attending to the cultivation of the seed and its proper sowing. Without this cultivation and sowing, the crop will be poor in quality and its value as nutriment for all India's needs will be meagre. But if they are well cultivated and well sown, Indian higher education will enter upon a new phase of its history and Indian society will benefit greatly.

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